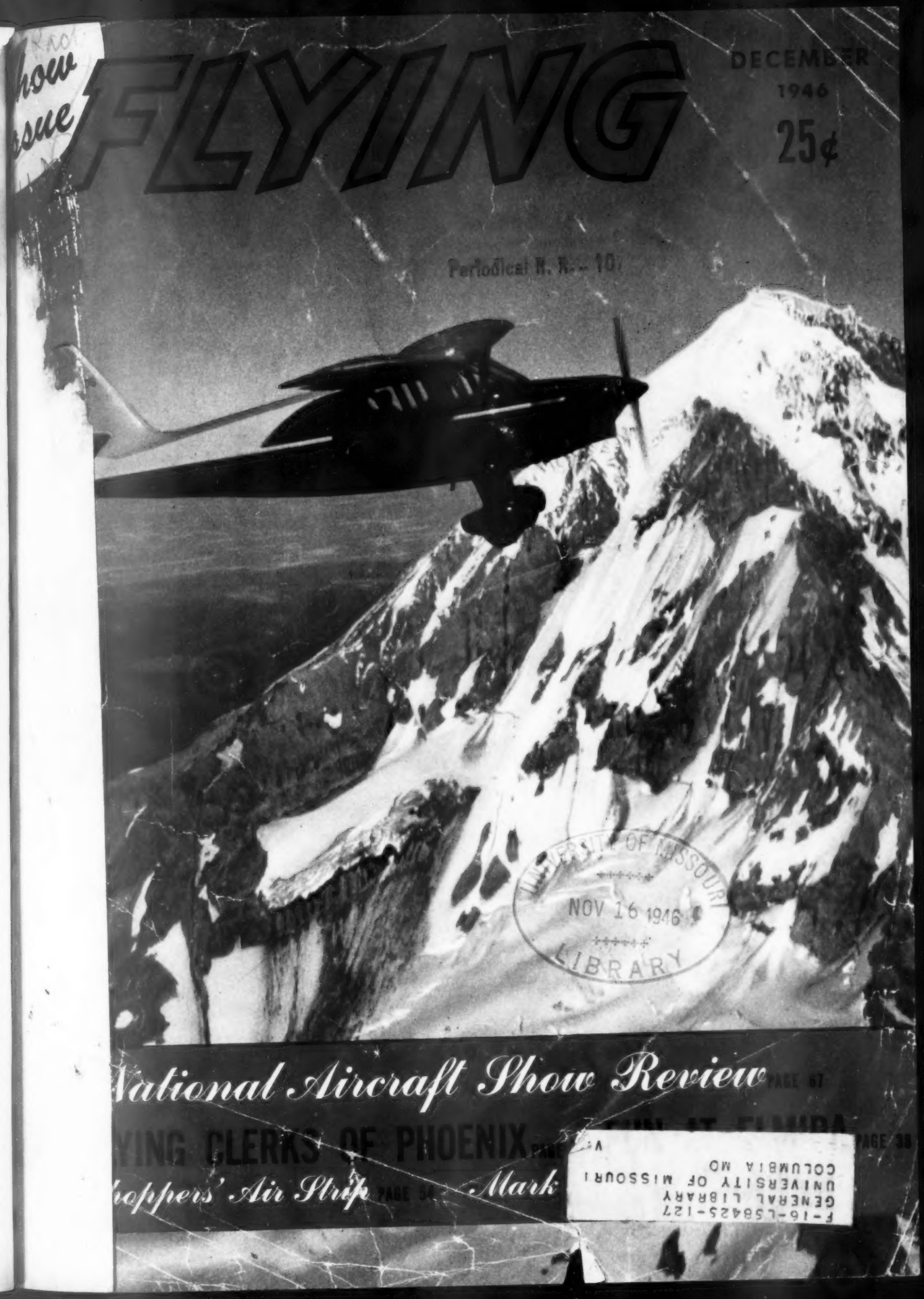
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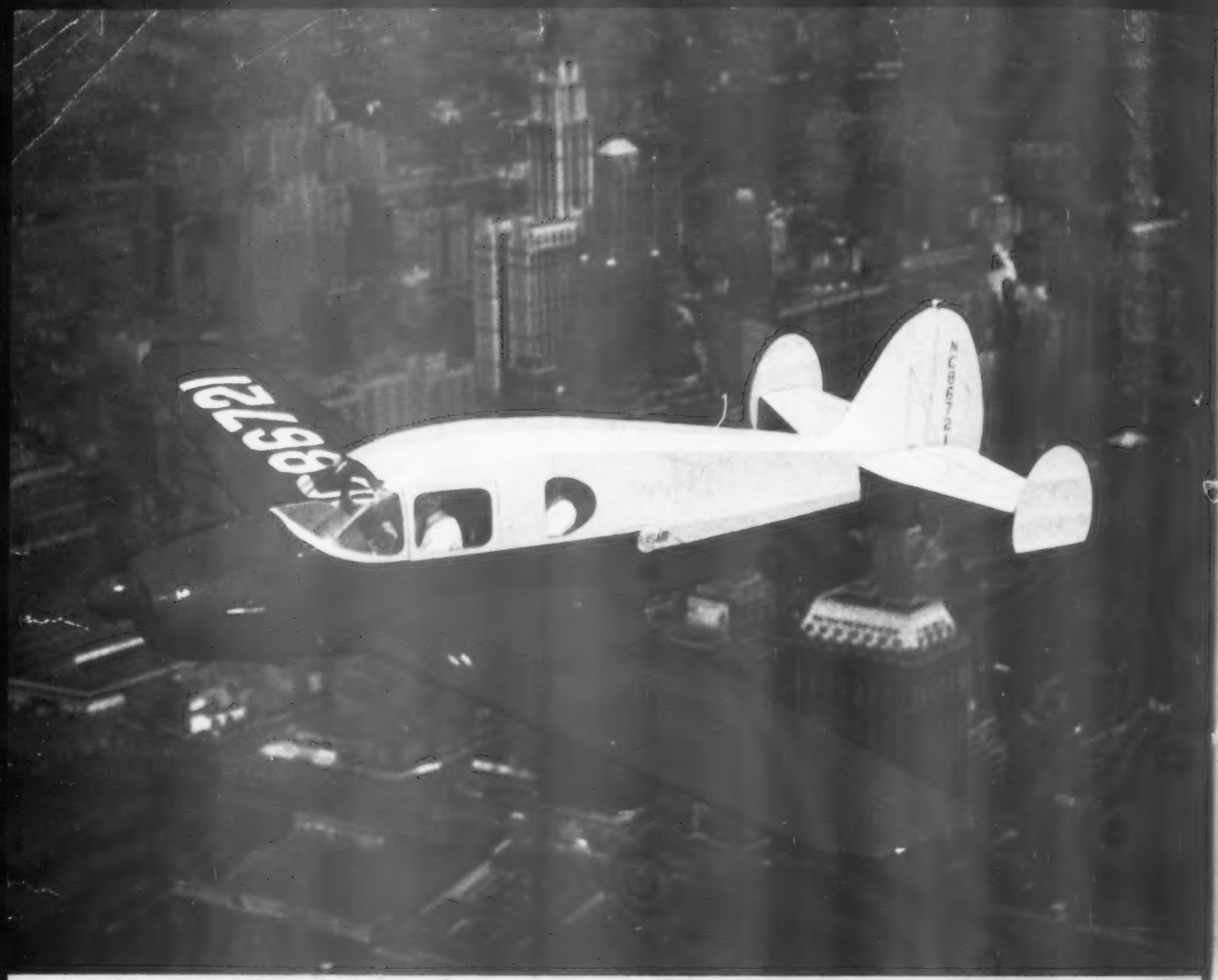
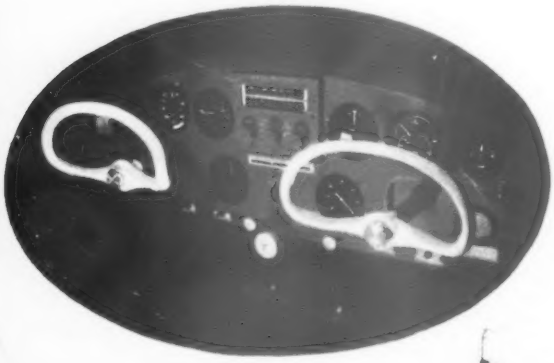


# *They all say, "BELLANCA IS AMERICA'S TOP FLIGHT PERSONAL PLANE!"*

*Cruisair's shock-mounted instrument panel is gracefully-styled, well-planned, modern, accessible, easy to read from either control wheel, finished in non-glare crackle. Knobs and switches are mounted on recessed lower panel for safety.*



YES, top-flight in more ways than one . . . in its accepted leadership . . . in its easy flying features . . . in its outstanding combination of speed, comfort and economy! That's the word that's going round from coast to coast, among Bellanca distributors and the many new Cruisair owners. Words like: "The easiest *fast* airplane to fly" or "She climbs like a skyrocket"—while another praises its "Top-flight safety characteristics." . . . Pilots are enthusiastic over the fast cross-country pace of this clean, dependable utility plane. At your earliest opportunity *fly* a Cruisair and you'll see what we mean! . . . Bellanca Aircraft Corporation, New Castle, Delaware.

**BELLANCA CRUISAIR SENIOR**

# Foam in a sandwich makes a finer floor for flight

IF 200,000 high heels were to walk over an airliner's floor, how many times would it have to be replaced? Three times? Five times? Some maintenance men might say even higher, because floors that are light enough for flight couldn't be made tough enough for impact like that. Weight concentrated on a small point (like a high heel) is especially troublesome . . . punches holes and makes for frequent replacement.

Not so with a new B. F. Goodrich flight floor material. A section of it installed on a 10-degree ramp in the B. F. Goodrich offices last December has been taking the pounding of approximately 2000 low and high heels a day plus the punishing wheels of 44 mail trucks. Other flight floor materials in this same test had to be replaced three times, but the B. F. Goodrich floor material still continues to "take it." The secret of its success is "foam sandwich" construction.

The sandwich (see inset) consists of a core of a new, lighter, stronger hard rubber foam between thin skins of high-strength materials. The result is a lighter weight board with greatly increased load strength and resistance to indentation.

One of the most important characteristics of this material is its extremely low moisture absorption, which means that the sandwich does not gain weight in service.

This favorable weight-strength ratio, the easy workability of the material, open it to many potential uses besides floors. Strong, lightweight panels, doors, furniture, including curved surfaces, can be made with it. For additional data, write to *The B. F. Goodrich Company, Aeronautical Division, Akron, Ohio.*

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# FLYING

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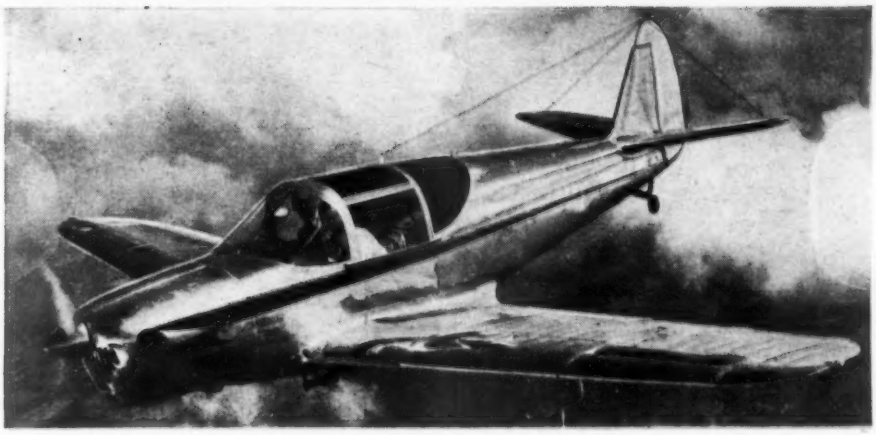


# IF YOU'VE GONE GA-GA OVER A GLOBE-SWIFT . . . LISTEN . . .

We have a very brotherly feeling towards men who go to work . . . through the clouds.

We're air-minded too. To prove it, we've got the goods right here on earth.

You'll see what we mean when you taxi to a stop at some air field in the great Middle-West, and spy that famous orange-and-black "66" shield. That's the sign of Phillips Aviation Products. And we believe that name's a synonym for the BEST in the Middle-West, as far as fuels and lubricants are concerned.

You'll find that we've taken the trouble to manufacture and distribute a plentiful supply of UNLEADED 80 octane gasoline to all "66" airport pumps. See what this gasoline can mean to you—in terms of better performance and a cleaner engine!

Happy flying! Hope to see you soon!

Phillips 66

AVIATION GASOLINE

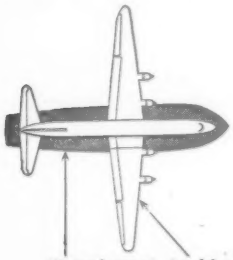
# HANGAR FLYING

LOCKHEED

## Course Onward

In October, 1797, the United States Navy proudly launched a graceful, three-masted, 44-gun frigate. In October, 1946, almost a century and a half later, they launched with equal pride a graceful, four-engined airborne transport.

Both ships are called the *Constitution.* The frigate was built in Boston by Joshua Humphreys—the transport in Burbank by Lockheed. Comparison:



| | Humphreys' | Lockheed's |
|---|---|---|
| Length | 175 | 156 |
| Width | 43½ *(beam)* | 189 *(wingspan)* |
| Height | 230 *(approx.)* | 50 |
| Capacity | 400 | 180 |
| Top speed | 12 *(knots)* | 300 *(miles)* |

As did the frigate in her time, the flying *Constitution* marks the beginning of a new chapter in naval achievement. A story in the Boston *Centinel* (October 25, 1797) once again becomes currently valid:

*"The best judges have pronounced the 'Constitution' to be a perfect model of elegance, strength and durability. And every individual employed in her construction appears to pride himself in having assisted at the production of such a* chef-d'oeuvre *of naval architecture."*

**Look to Lockheed for Chefs-d'oeuvre**

© Lockheed Aircraft Corporation, Burbank, Calif.


# LETTERS

### SUPERSONIC SPEEDS

I enjoyed the article "How to Fly Faster Than Sound" (FLYING, September issue). As I understand it, a plane flying at normal speeds gives the air a chance to get out of the way since sound is travelling ahead of the plane preparing the way. When a plane is going faster than sound it doesn't give the air time to get out of the way and shock waves are the result.

Why can't some electronic device be developed to be put along the leading edges that will send electrical waves well ahead of the plane? It might be possible to charge the air particles in such a way to cause them to jump away from each other. If this could be done it might create a vacuum ahead of the leading edges and the plane could slip through the air at supersonic speeds.

This may not be the answer, but I think it should be looked into.

PVT. CALVIN VANCE

Keesler Field, Miss.

### USED DUGGAR FIXER

I was crew chief on Lieutenant Colonel Duggar's C-47 in which the Duggar fixer was used. It seems to me that it is worth more than just two lines and one photo in your magazine [September, 1946, page 56].

I flew many check flights with Duggar, as well as one coast-to-coast round trip, and I found it quite successful.

ELMER W. MACK

Hume, N. Y.

### OBJECTS TO EDITOR'S NOTE

I did not like the editor's note under the letter "Army Pilot Talks Back" (FLYING, August issue) stating that there is proof of service pilots' recklessness with civil aircraft in the files of all aviation insurance companies, the CAB and AAF's Air Safety Command.

Granted some Army and Navy pilots have done some foolish flying, but let's not condemn 200,000 ex-service pilots for these few. I believe, after five years of flying with the Army, we do have some safe and careful pilots out of the service.

Statements like yours will just start public prejudice against all ex-service pilots.

JAMES HENRY CRUMBIE, JR.

Philadelphia, Pa.

### HELICOPTER OPTIMISM

The August issue of FLYING is a fine example of a good, informative aviation publication. However, when reading your article "How Much Is True About the Helicopter?" I was very much surprised to note the apparent prejudice you hold against a fine flying machine. I grant that you gave credit where it was due, but you were too hard on what has been published so far concerning the use of helicopters.

You made no mention of Col. H. F. Gregory's book *Anything a Horse Can Do —the Story of the Helicopter.*" Colonel Gregory seems to know what he is talking about. If you haven't read it, I would suggest you do so soon. Too much optimism won't hurt the development of the helicopter.

J. MORNAN

Selkirk, Ontario

● It isn't necessary to open Colonel Gregory's book—though we did. Just read the title, slowly—its implications are what we call "helicopter hocum."—ED.

### LIKED HELICOPTER DEBUNKING

I read the article "How Much Is True about the Helicopter?" (August issue) and was very much impressed by the essential facts it conveyed. As a veteran pilot, I believe that your debunking of false concepts created by popular writers is essential and appreciated.

W. G. LANEY

San Diego, Calif.

### C&GS CHARTS

You did a good job taking care of Mr. Whittier's letter in your August issue—the one in which he complains about aeronautical charts published by the Coast & Geodetic Survey.

What caught my eye was Mr. Whittier's statement that private flyers do not need such things as isogonic lines, meridians of longitude, and parallels of latitude. And he asks that somebody tell the C&GS about this! It's my opinion that someone did tell the C&GS what flyers needed and those lines were included as of first importance.

To those of us who struggled with maps before there were any C&G charts, the present chart seems "a thing of beauty and a joy forever." I have never found the C&GS anything but enthusiastically ready to make improvements based upon recommendations of people using the charts.

For those who share Mr. Whittier's sentiments—there couldn't be many—I have two suggestions:

1. That they learn something about the limitations imposed upon the C&GS—insufficient appropriations, manpower shortages, etc.—which affect their ability to keep the charts completely checked; and

2. That they try to imagine what the charts would look like if the C&GS drew into them all of the features that every pilot thinks should be shown.

Of course, in the last analysis, I feel quite sure that most of Mr. Whittier's chart troubles would fade away if he

(*Continued on page* 154)

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Flightweight*

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Wherever Americans fly personal airplanes, Bendix FLIGHTWEIGHT* Radio is the acknowledged leader in V.H.F. (Very High Frequency) Radio transmission —the really postwar air-to-ground communication for all personal plane operations.

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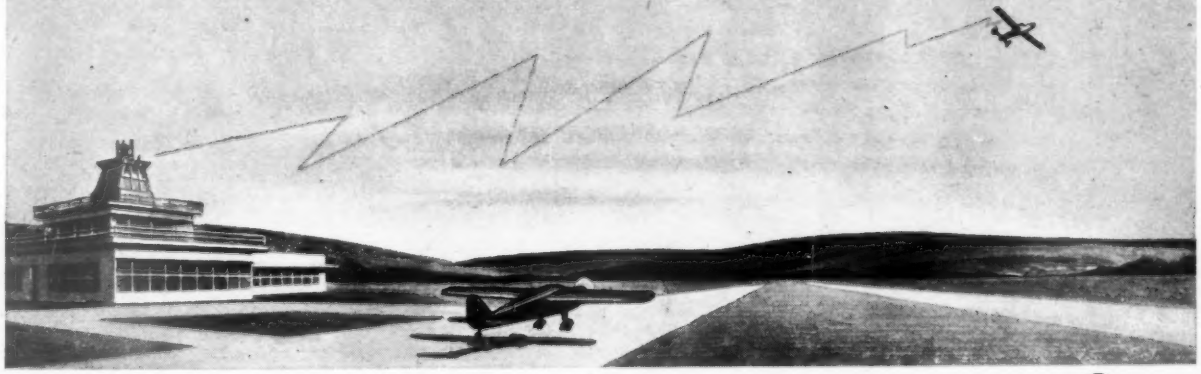

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# HAVE YOU HEARD?

***. . . About the paper shortage? That explains the varied grades of paper Flying has used recently. We expect that better paper in the near future will permit us to return to the uniform high-quality stock which has always been one of the hallmarks of Flying's excellent publishing job.***

. . . **New unofficial altitude record for the Ercoupe** was established recently when one was climbed to 21,500 feet over Chicago. Previous Ercoupe record was 16,500 feet. Fulton M. Moore, manager of Pal-Waukee Airport, who set the record, reported that the plane was fully equipped and had full fuel tanks. It took 1 hr. 52 min. to reach the record altitude—nearly an hour of it in climbing the last 3,500 feet.

. . . **Non-inflammable hydraulic fluid** which should "markedly improve flying safety of both military and commercial aircraft," has been developed for the Navy. The fluid, designed to reduce fire hazards resulting from broken hydraulic lines, will be standard equipment for all new Navy planes. Details of its composition have been released to both the airlines and aircraft manufacturers.

. . . **An "Electropult" is the latest launching device** used on shipboard and small landing fields. It is essentially a huge electric motor with a 1,382-foot track and a small shuttle car. The plane is hitched to the shuttle car which speeds down the track and tows the plane in the air. This device, designed by Westinghouse Electric Corporation, recently launched a jet-propelled plane at 116 m.p.h. in 4.1 seconds, after a run of 340 feet. This compares with a normal take-off run of 2,000 feet. Designs for an electropult capable of launching large airliners at 120 m.p.h. with a take-off run of 500 feet (instead of a 4,000-foot run) also have been completed.

. . . **Broadcast newspapers** for air travelers were forecast with the recent printing of a four-column edition, complete with latest press association stories and pictures, aboard a PCA plane. It marked the first use of airborne facsimile, called Telefax, in a commercial airliner. Slightly smaller than a tabloid, the miniature newspaper was relayed to the plane over the Finch facsimile system from a broadcast station in midtown New York. The receiving unit, about the size of a typewriter, printed the paper at the rate of 500 words a minute.

. . . **Property near an airport does not drop in value**, according to a recent survey conducted by the National Aeronautics Association. Chapter secretaries consulted leading real estate agents in all parts of the country to get an expert appraisal of the effect of an airport development on property values. Of 19 questionnaires so far returned, opinions showed that local airports had little or no effect on property values. Seven reported material increases in property values, and two cited reduction in property values in the immediate area of the field but an overall price benefit to property from the fields' existence.

. . . **Civic groups are showing increased airmindedness.** Chambers of commerce in 14 leading cities have special committees handling aviation matters. In dozens of other cities business groups are sponsoring aeronautical activities for youth. It also is significant that the CAB recently amended its rules of practice to permit chambers of commerce and similar civic groups to intervene in airline cases.

. . . **All future high-performance aircraft will be jet-propelled,** R. G. Standerwick, chief engineer of General Electric's Aircraft Gas Turbine Division, recently predicted. G-E has been given "the green light" by the AAF to manufacture all present designs of jet engines and to speed up its development program for newer and more powerful designs. Standerwick believes that the speed of jet-propelled aircraft will increase to 1,500 m.p.h. and that it is reasonable to expect the plane's gas turbine power plant to operate at altitudes up to 15 miles.

. . . **"Flying newsboys"** deliver the daily paper to towns surrounding Winfield, Kan. The first copies of The Courier are bundled into a plane at the airport and dropped at several of the towns before the home town carriers get their papers folded and started on their routes. The route covers an area of 107 miles and takes one and one-half hours. By car, part of it over country roads, delivery would require five hours.

. . . **It was just like manna from heaven** when two chartered DC-3s landed with 11,500 pounds of pork in practically meatless Hackensack, N. J. The cargo of ham, bacon and pork loins was ordered for the opening of a new super market. Because of the trucking strike the owner chartered the planes and had his own truck waiting at the airport.

. . . **A record number of 21,935 student pilot certificates** was issued in July. Previous monthly peak for this type of certificate was 20,466 in September, 1940, under the Civilian Pilot Training program. The 21,935 new certificates issued in July, plus the 64,253 for the first six months of the year, total 86,188 or 12,188 more than issued during the entire year of 1945. END

# EMBLEMS OF A NEW KIND OF LIVING . . . . . and a new experience in Flying

Gentlemen:
I'd like to fly the Culver Model "V". Who is my nearest Culver Dealer?
(I am, am not a pilot.)

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ADDRESS_____

CITY_____ STATE_____

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BEST TODAY··· STILL BETTER TOMORROW

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# SKY CHAMPION

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FIRESTONE, pioneer and pace-maker, is first again — this time with a new, improved aircraft tire that stays safe from overhaul to overhaul, avoiding costly delays. The new Firestone Sky Champion features the new, wider, flatter Safti-Grip Tread for safer braking, better steering control on the ground and longer non-skid life.

Safti-Sured Construction assures extra strength for the hardest landings. Light weight permits extra pay load.

New Firestone Sky Champions are now available in sizes that fit landing wheels, nose wheels and tailwheels on most types of planes. They are especially effective for tricycle landing gears. For complete information phone, wire or write Firestone Aircraft Company, Akron, Ohio; or Los Angeles, California.

*Listen to the Voice of Firestone every Monday evening, over N. B. C.*

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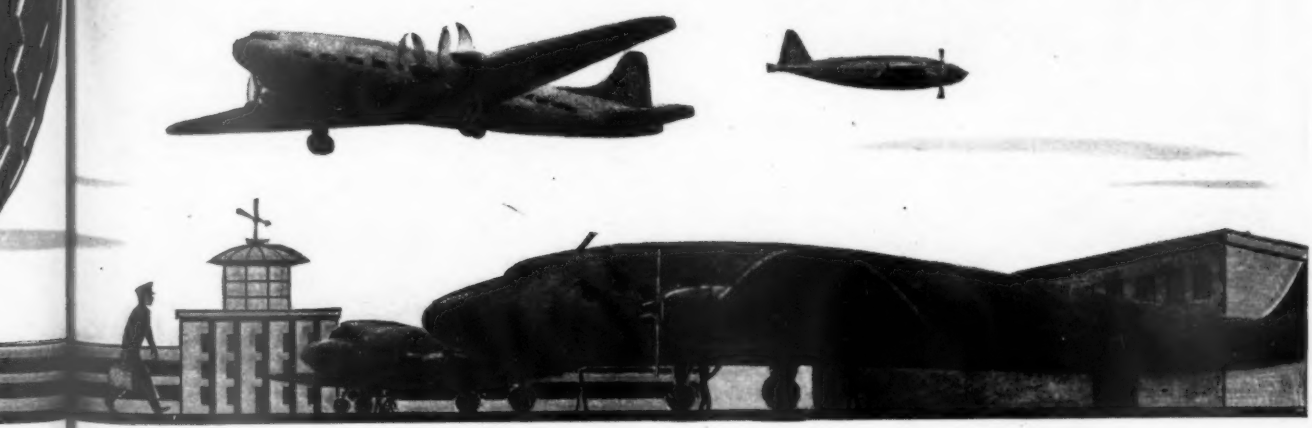


# NOW-2 New Edo Floats

## High Output and Improved Design Cuts Costs of All-Metal Floats with Reduction in Weight

Instead of raising prices, Edo now cuts prices down $515 and $600 on two completely new, greatly improved lightplane floats. Mass output, with high production tools combined with wartime experience in producing all Navy floats, makes it possible to give you this saving.

**The New Model 1650 at $1,250.**
***Replaces Model 1620 at $1,765.***
**The New Model 2000 at $1,350.**
***Replaces Model 1965 at $1,950.***

Edo engineers designed these floats specifically for the latest types of postwar planes, such as the Cessna 140 and Piper Super-Cruiser. Despite the slight increase in displacement, they cut 30 pounds from each installation. Floatplane performance is excellent, with added utility.

### Model 2000 for Piper Super-Cruiser

Equipped with Edo Model 2000 Floats, the Piper Super-Cruiser enables a seaplane base operator to take up two passengers at once. Sales demonstrations, charter or sightseeing flights have more payload in this plane. The private owner also has space for two friends or members of the family. Or there is more baggage room if only pilot and one passenger go cross-country. For either base operator or private owner, an electric starter adds one more strong advantage to this outstanding plane.

Model 1965 . . . ~~$1,950.~~ New Model 2000 . . . $1,350.

# at Amazingly Low Prices

## Model 1650 for Cessna 120-140

This all-metal plane is admirably suited to the installation of Edo all-metal Model 1650 floats. The Cessna 140 is ideal for the private owner who wants outstanding performance. With flaps, the Cessna handles full load take-offs with ease. Its electric starter is another convenience for the owner. With less de luxe equipment, it becomes the Cessna 120, an excellent plane for the operator who seeks utmost economy in flight training or rentals.

Model 1620 . . ~~$1,765~~. New Model 1650 . . $1,250.

These new Edo floats are sleek and streamlined. Tops are curved with deck rails providing good footing. The keel is now external and easily replaceable. Removable bow bumpers give protection in docking. Hand-hole covers of a new "speed" design offer less drag and may be quickly removed or locked in place with a half-turn.

A clean cantilever strut design replaces the spreader bar arrangement. There are fewer parts in the float gear and all brace wires are eliminated. Installations are fast and simple.

Superior in design, these models not only give the usual rugged service of Edo all-metal floats but are easier, more economical to maintain. Repairs may be made in the field, with less loss of flying time.

### HOW TO ORDER EDO FLOATS

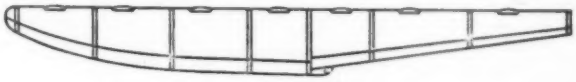
These floats are available only through Piper or Cessna dealers and distributors. Production is now in full swing, with all deliveries made according to receipt of orders. For prompt delivery, see your Piper or Cessna representative today.

**WRITE TODAY . . . for these FREE Booklets**

Learn more about the fun of flying floats, plus details of planes, floats and bases. Just send a postcard or letter

### RUGGED SERVICE AND EASY REPAIRS

This cutaway view of the new Edo float, available as either the Model 2000 or Model 1650, shows the construction which gives inherent long service life. It is made in four component parts, each easily replaced by riveting. Each component is built in precision jigs and is universally interchangeable. The bottom is of flat sheets and may be repaired in the field with the correct gauge metal. The external keel may be removed without disassembly of the entire float. The chines may likewise be removed for maintenance work. Bow bumpers are bolted on, reached for easy removal through the forward hand-hole cover.
(Both the Model 2000 and 1650 are identical, except for length).



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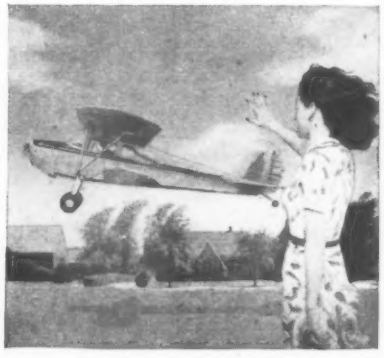
**25 Gallons Of Fuel** carried in twin wing tanks take you over 450 miles non-stop... over 4½ hours of flight. And there is a lot of room to take along plenty of luggage for 2 people for 2 weeks... up to 80 pounds.

**Upkeep Is Lower**... maintenance time reduced ...with a Cessna. The engine cowling is easily removed for quick service without touching the propeller. And the safety landing gear requires a minimum of service.



**You'll Fly More Days** a year in a Cessna. With the 140's safety landing gear, steerable tail wheel and full-size hydraulic brakes, you can taxi safely on windy days when other light planes are grounded.

**You're A Step Ahead** of competition, when you fly your own Cessna. The businessman who's tied to the ground is often too late, when he's up against the man with a Cessna. With a top speed over 120 m. p. h. and schedules of your own making, you get there sooner and oftener... spend less time on the road and more at destinations.

To make business or pleasure flying easier and safer, the 140 also offers you the patented, safety landing gear ... full-range flaps... a service ceiling of 15,500 feet... for the low price of $3245 (f. o. b. Wichita). And the Cessna 120 at only $2695 (f. o. b. Wichita) is essentially the same fine airplane, but without starter, generator, battery, flaps, and with less luxurious trim. See them both at your dealer's now, and you'll agree that Cessna gives you *more for your money.*

CESSNA AIRCRAFT COMPANY, DEPT. F, WICHITA, KANSAS

Cessna
THE PILOT'S AIRPLANE

# IT'S AIRADIO FOR ALL AMERICAN

## 'World's Most Modern Aircraft Radio' Fully Approved for New All American "Ensign"

Meet the All American "Ensign," an all-metal, low-wing monoplane with a 360° range of vision afforded by its exceptionally large bubble canopy. The "Ensign" is expected to have a speed in excess of 120 m.p.h., a cruising speed of 110 m.p.h., and a range of better than 400 miles with a useful load of 550 pounds.

Now meet Airadio's new Super "52," the two-way communication system that has been fully approved by All American for installation in the new "Ensign." In the words of Ernest Adler, Chief Engineer of All American, "We have found that Airadio's Super "52" gives superior performance during normal use, and it has given unsurpassed results during our testing program."

### Important Features

You too will find that the Airadio Super "52" will give superior performance in your plane at all times. In addition to the safety that it gives you, the Airadio Super "52" also adds to the pleasure of flying by allowing you to tune in on your favorite standard broadcast.

Remember, too, that with the Airadio Super "52" you get easy installation, standard size components replaceable anywhere, long-range reception and transmission, plus the assurance of uncompromising quality built in by Airadio's pilot-engineers.

**Ernest Adler, Chief Engineer of All American Aircraft, Inc., says:**

"We have found that Airadio gives superior performance during normal use, and it has given unsurpassed results during our testing program."

Chief Engineer *Ernest Adler*
All American Aircraft, Inc.

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# *A new kind of air travel is coming soon!*

# *...in the new 300 m.p.h. Convair-240*

YOU'VE never seen—or flown in—a twin-engine airliner like the new Convair-240! Here is an airliner with dozens of features which, in the past, have been yours to enjoy only in the most luxurious "extra fare" airliners.

The Convair-240 cruises at 300 m.p.h. The air pressure in the cabin is automatically controlled for your complete comfort during flight at high altitudes over mountains or bad weather. There's plenty of leg room as you relax in easy-chair comfort . . . and the cabin is air-conditioned for winter and summer comfort, and restfully soundproofed.

Power? The Convair-240's engines are so powerful that it could, if necessary, take off and climb, fully loaded, on a single one of them! What's more, the engines are plussed with the additional speed and power of jet-exhaust propulsion—in its first commercial airliner application.

Within a few months this modern 40-passenger airplane will be in service on five of the most progressive airlines: American, Western, Pan American, Continental, and KLM Royal Dutch.

Watch for it! Your first flight will tell you that in the Convair-240 a new concept of "Air Travel for Everybody!" has been born.

## CONSOLIDATED VULTEE AIRCRAFT CORPORATION

**San Diego, California • Downey, California • Wayne, Michigan (Stinson Division)**
**Fort Worth, Texas • Nashville, Tennessee**

**NO WAITING FOR LUGGAGE!** A hint of the many time-saving conveniences and trouble-saving innovations you'll find aboard the Convair-240 is the rack where you can place your bag if you wish to carry it aboard yourself. Upon arrival at your destination, there's no annoying delay, as in the past, waiting for luggage. The built-in ramp swings down from the fuselage, and as you leave, you just take your bag from the rack where you left it!

### COMPARE!

| | Conventional twin-engine airliner | The modern Convair-240 |
|---|---|---|
| Speed | 180 m.p.h. | 300 m.p.h. |
| Engines | 2400 total h.p. | 4800 h.p. |
| Power | Conventional | Auxiliary jet exhaust |
| Passengers | 21 | 40 |
| Pressurized cabin | No | Yes |
| Ventilation | Conventional | Air-conditioned |
| Anti-icing | Rubber "boots" | Heated wings |
| Baggage | Check it, wait for it at airport | Carry your bag aboard if you prefer |
| Aisle | "Uphill" | Always level |
| Passenger Visibility | 180 sq. in. per window | 288 sq. in. per window |

Copyright 1946 Piper Aircraft Corporation

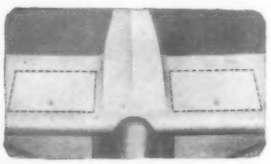
# 50% MORE PEOPLE... 17% TO 33% MORE "HORSES" than All Other Planes at Its Price!

**ALL THESE FEATURES AT NO EXTRA COST**

**ELECTRIC STARTER.** Just press a button on the instrument panel to start the engine. No hand-cranking the propeller. It's as safe and easy as starting your car.

**TWO-WAY, TWO-BAND RADIO.** Combines transmitter and receiver. Instrument panel control. Both airways and regular broadcast reception are yours.

**ENGINE MUFFLER.** Quiets the exhaust of the powerful hundred horsepower engine to a husky purr. It adds to the comfort and enjoyment of every flight.



**EXTRA GAS CAPACITY.** Two wing tanks (indicated by dotted lines) hold a total of 38 gallons for a 600-mile range—more than any other plane at its price!

YEAR in and year out Piper, the leading personal plane manufacturer, offers you the most for your money! This smart new Piper Cub Super Cruiser has no equal in its price class. It seats *three*, half again as many passengers as other similarly priced planes. Its thrifty engine packs a full hundred horsepower—17% to 33% more than any other plane at the same price. The Super Cruiser's top speed is 115 miles per hour. It will take you on 600-mile trips without refueling. And you enjoy, as standard equipment on the Super Cruiser, deluxe features such as the electric starter and two-way, two-band radio—"extras" on most other planes in the same price field!

Ask your Piper Cub Dealer for a free flight demonstration, for the full-color literature on the new Piper Cubs, and for the popular books . . . *How to Fly a Piper Cub*, and *What Your Town Needs for the Coming Air Age*. And remember—only Piper makes the Cub, that good, safe plane. Piper Aircraft Corporation, Lock Haven, Pennsylvania, U.S.A. . . . In Canada: Cub Aircraft Ltd., Hamilton, Ontario.

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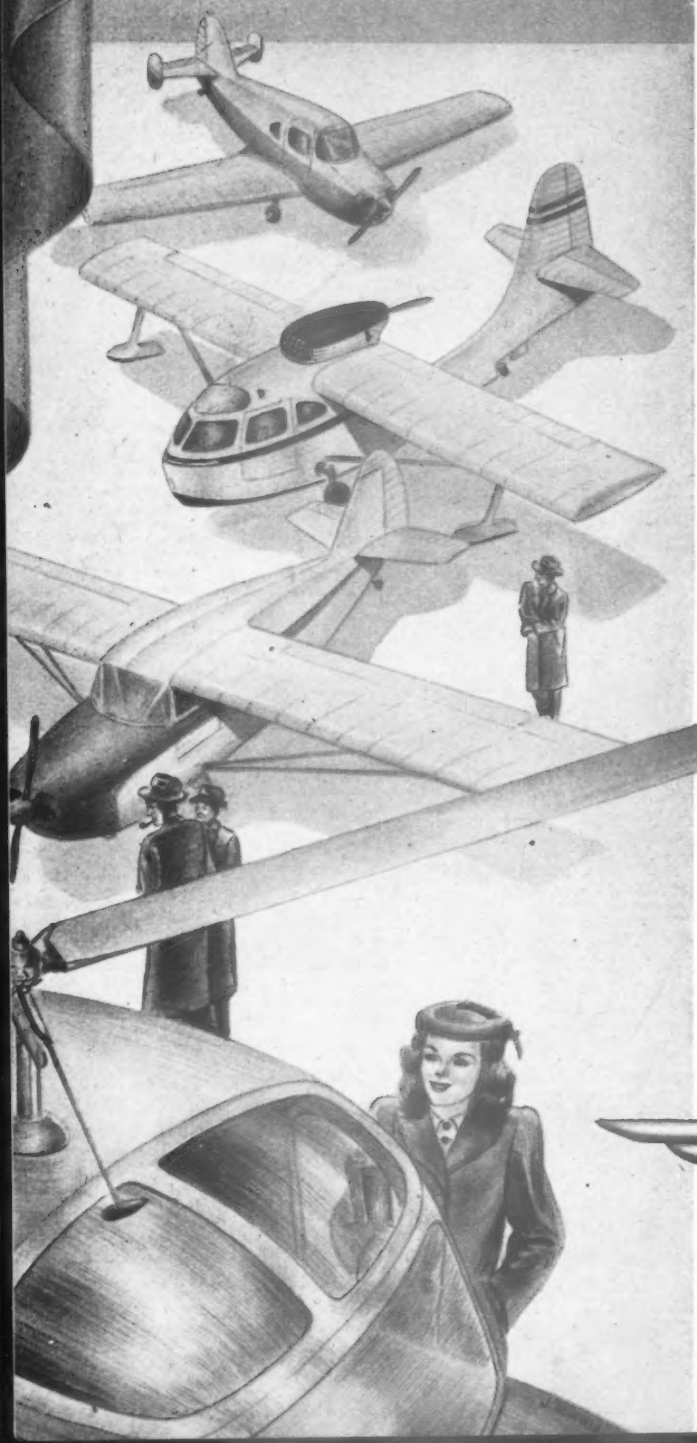
# See these great new planes with POWER BY FRANKLIN at the National Aircraft Show



Compare the utility, speed, range and economy of every plane at the National Aircraft Show in Cleveland, Nov. 15 to 24. The more you check, the more you'll find yourself turning to one of the planes that boast "Power by Franklin"! For it's hard to beat the Franklin-powered group on any basis involving cost and performance. Whichever you choose—Bell Helicopter, Bellanca Crusair, Republic Seabee or Stinson Voyager—remember that you are getting a better plane because it's powered with a Franklin engine.

See the Franklin engine exhibit at the National Aircraft Show! It will feature standard Franklin horizontally-opposed, air cooled models for regular, submerged, pusher and vertical helicopter installations.

Franklin
FINE AIRCRAFT ENGINES

**AIRCOOLED MOTORS, INC.**
**SYRACUSE, N. Y., U.S.A.**

## all the world's its stage

What's this! The helicopter retrieves lost golf balls, mixes ice cream, paints the barn? No, it can't take credit for all that. But here you do see a new kind of flight. The Bell Helicopter is ready now to do a useful, a practical, a businesslike job for you.

A Bell Helicopter rescued fishermen from Lake Erie ice when all other means had failed. A second prospected with swift-winged ease in Canada's almost impassable mineral-rich "bush." Another wiped out pests at low cost per acre.

On the business scene, the Bell Helicopter can lift mail from the post-office roof. Set down a hurried passenger exactly where he wants to be. Hover where "X" marks the spot of news-in-the-making. Inspect far-flung power lines. Patrol forest, pipeline, highway.

There are good reasons why the Bell Helicopter can do hundreds of jobs like these with time and dollar saving facility. It can take off from or land in a space hardly larger than the ship itself . . . turn on its own axis . . . fly with sure stability at any speed from 0 to more than 100 mph. And so it cruises safely into all the nooks and crannies of the air.

For full facts about The Modern Magic Carpet* and Bell-schooled pilots to fly these ships, write Helicopter Division, Bell Aircraft Corporation, P. O. Box 1, Buffalo 5, New York.

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**• Pioneers in jet-propulsion, radio-controlled flight and supersonic aircraft for the Army and Navy. Designers and builders of the world's first commercially licensed helicopter.**

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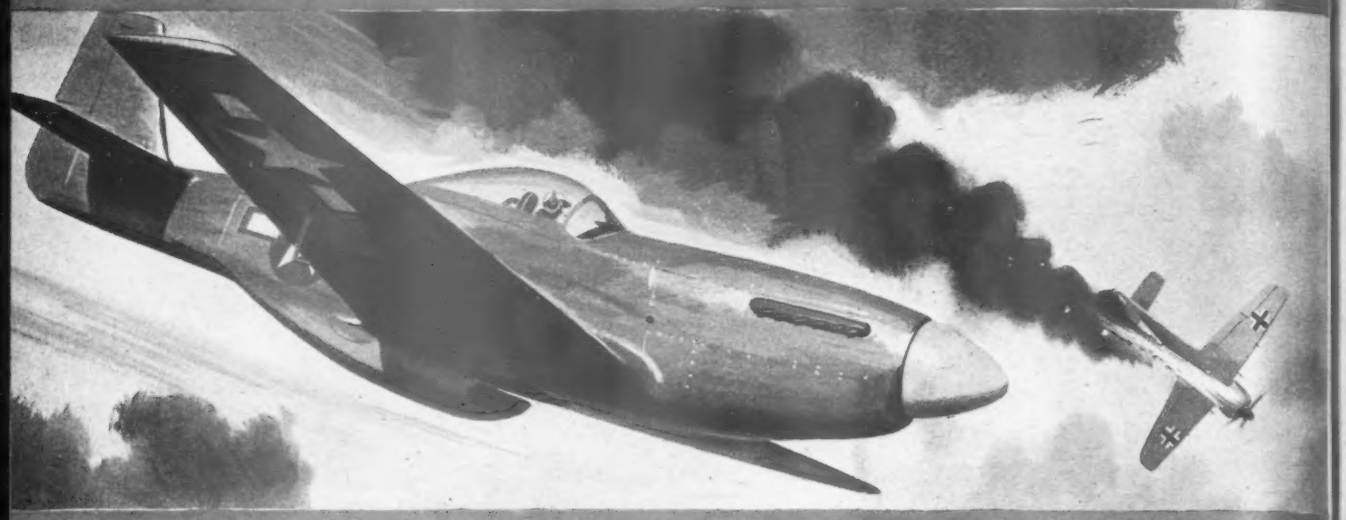
B.W.AVER

# FLEW 200 COMBAT MISSIONS



# TODAY HE FLIES AERONCA!

***OUT OF THE SERVICE—INTO AN AERONCA!** Lt. Col. Martin Low, wearer of the D.F.C. (with one cluster), Air Medal (with six clusters), Presidential Unit Citation and eight campaign stars . . . former Squadron Commander . . . says—*

"Sure, flying a P51 and tangling with Zeros, ME109's or FW190's is plenty different from flying Aeronca with nothing but clear sky and pleasure ahead.

"But there's one similarity that hit me right off. When I flew combat I knew my ship was the best Uncle Sam had to offer. Today—when I fly the Aeronca Chief, I'm convinced it's the best plane the U. S. has to offer in the low-price field!"

So chalk up another for Aeronca! Another ex-service pilot who *knows his planes, knows his flying and chooses Aeronca over all others!*

Listen to the experience that backs up Mr. Low's words. In the thick of it from start to finish. Pearl Harbor on December 7, 1941 . . . fought in the PTO and the ETO . . . ended up as Squadron C. O. of a P51 and P38 outfit.

And it's not just the men with wings who sing the praises of Aeronca. Thousands who never flew before are finding . . . Aeronca *has* made flying so safe, so simple . . : now *anybody can fly Aeronca . . . Aeronca truly is America's greatest value in the low-price plane field!*

---

***A trio of AERONCA features offered by no other plane priced so low!***

**ALL SET TO TAKE OFF,** Mr. Low simply pulls the handy starter, the engine kicks over . . . he's ready to go. Operated from cabin, starter is just one of 35 extra-value features you'll find in the Aeronca Chief.

**"SO THAT'S THE SECRET** of those smooth, cushioned landings," says Mr. Low as he inspects Aeronca's heavy-duty Oleo landing gear. Yes, from take-off to landing, in Aeronca, it's smooth going all the way!

**SEE FOR YOURSELF!** Loads of room for Mr. Low and another in the luxurious cabin of the Aeronca Chief. Luggage is out of the way in the rear. Seats are deeply upholstered to insure relaxed flying.

***"AERONCA sure has that certain know-how in designing planes," says Martin Low,*** ***pictured by the new De Luxe Aeronca Chief, America's lowest priced two-seat (side-by-side) plane, "that makes for the most luxurious, trouble-free, economical flying I've found in any plane in its field!"***

Discover *for yourself* that Aeronca's superior engineering gives you greater luxury, economy and flying ease!

Get out to the airport and FLY AERONCA! There's a plane waiting for you! Aeronca's now building more planes per day than any other company!

Step in through the wide automobile-type door of the Aeronca Chief. Settle down in the deeply upholstered seat. Note the easy-to-read instrument panel—truly a thing of beauty!

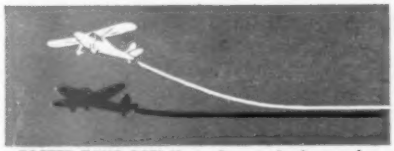
Now—take off! A pull on the starter and the engine kicks over. A short run and you're in the air! Then—what performance! The Aeronca Chief cruises at 90 mph . . . has a range of 420 miles . . . climbs at 500 feet per minute . . . responds instantly to slight pressure on controls.

Thanks to its low landing speed of 40 mph., the Aeronca Chief's landing run is less than 350 feet.

Compare Aeronca—feature-for-feature . . . dollar-for-dollar—with any other plane. See your Aeronca dealer this coming weekend. Remember—when you buy Aeronca, he'll teach you to fly Aeronca FREE! Aeronca Aircraft Corporation, Middletown, Ohio.

## So Safe-So Simple-Now

# ANYBODY CAN FLY AERONCA



**FASTER TAKE-OFF!** Up and away in Aeronca! Even on small fields close-to-field obstacles are cleared easily.

**TURNS IN SMALLER RADIUS!** Yes, there's greater all 'round maneuverability. Slight pressure on controls brings quick action.

**LOWER LANDING SPEED!** It's only 40 mph.—and that means Aeronca's landing run is less than 350 feet!

**Over 1000 Aeronca Qualified Dealers to serve you at handy airports all over the U. S. A.**

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*America's No. 1 Low Cost Plane*

DON'T MISS AERONCA'S GREAT EXHIBIT AT THE NATIONAL AIRCRAFT SHOW, CLEVELAND, NOVEMBER 15-24!

# ON THE AERONCA . . .

## *it's Plexiglas*

PLEXIGLAS fabricated by Fabri-Form, Byesville, Ohio

### Get the same advantages for YOUR plane

Designers for the Nation's leading plane manufacturers have chosen PLEXIGLAS for enclosures because it has just the properties they want.

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# at the NATIONAL AIRCRAFT SHOW!

In the spotlight for beauty . . . getting bouquets for performance . . . taking bows for economy . . . applauded for all-metal safety and utility — this gleaming NEW and deluxe 85-horsepower SILVAIRE by Luscombe is a hit ANYWHERE!

That's as it should be, because SILVAIRE has everything a star should have, except temperament. Completely all-metal construction — including the new all-metal, stressed-skin wing — gives SILVAIRE the airborn stability of a much larger ship. Finger-tip control gives extra maneuverability . . . easy flying for the long hops which SILVAIRE's range makes possible. Exclusive "Safety-Zone" cabin gives maximum protection. High-wing design means full visibility; interior appointments are in keeping with SILVAIRE's sleek exterior beauty. And, although cruising speed of the new SILVAIRE is 112 miles per hour, it lands and takes off easily on even the smallest fields.

Sharing top billing on fields all over the country is the 65-horsepower SILVAIRE. The same sturdy all-metal construction, the same gleaming beauty, the same magnificent performance . . . *plus* the even more economical 65-horsepower Continental engine.

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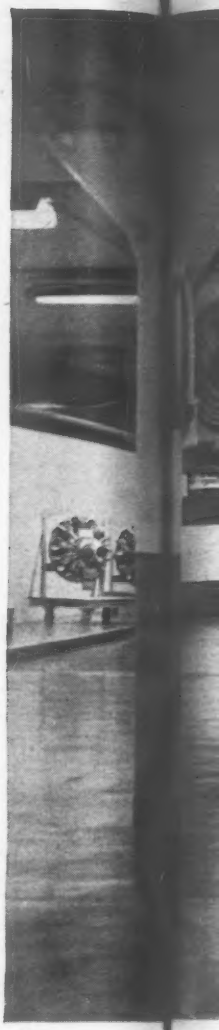

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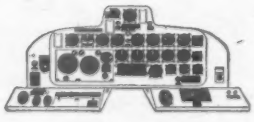

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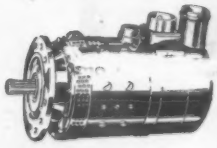

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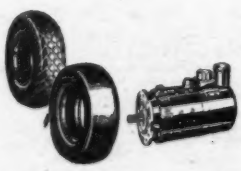

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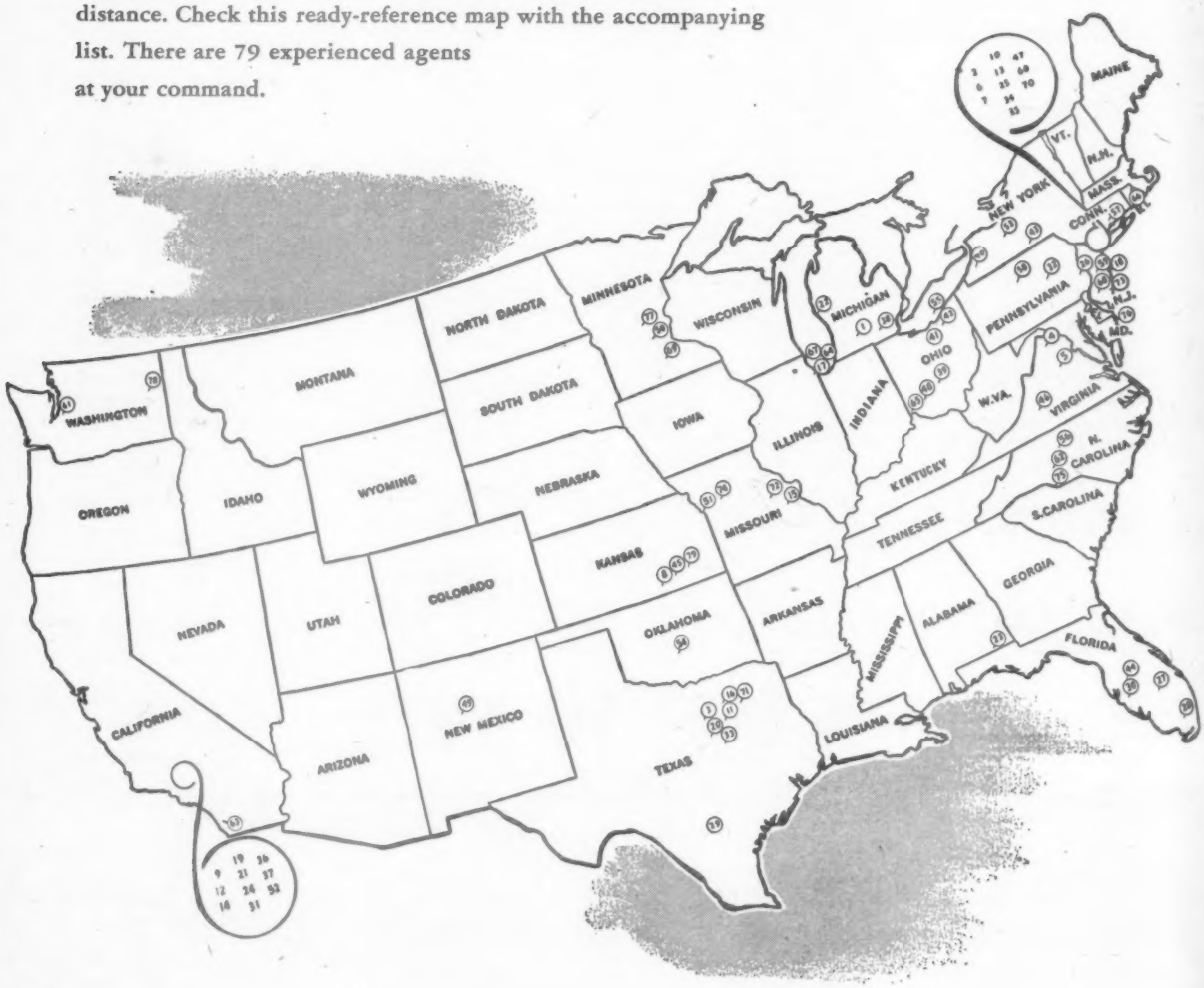

1. Abrams Instrument Company
606 E. Shiawassee Street
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2. Aero Bolt & Screw Company
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3. Air Accessories, Inc.
1400 Henderson Street
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4. Air-America Supply Agency
606—17th Street, N. W.
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5. Aircraft Components Corporation
213 King Street
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6. Aircraft Engine & Parts Corp.
53 Park Place
New York, New York

7. Aircraft Hardware Mfg. Co., Inc.
810 Edgewater Road
New York 59, New York

8. Aircraft Steel & Supply Company
415 North Water Street
Wichita 1, Kansas

9. Air-Parts, Inc.
723 Senora Avenue
Glendale 1, California

10. Frank Ambrose Aviation Co.
39-01 Main Street
Flushing, Long Island, New York

11. Aviation Activities, Inc.
1822 Republic Bank Building
Dallas 1, Texas

12. Aviation Maintenance Corp.
7701 Woodley Avenue
Van Nuys, California

13. Aviquipo Mfg. Corporation
25 Beaver Street
New York 4, New York

14. Charles H. Babb Company
1007 Airway
Glendale, California

15. Brayton Flying Service, Inc.
Lambert—St. Louis Airport
St. Louis 21, Missouri

16. Briggs-Weaver Machinery Co.
309 N. Water Street
Dallas 2, Texas

17. Chicago Airmotive Corporation
5643 W—63rd Street
Chicago 36, Illinois

18. China Motor Corporation
2300 N. Stiles Street
Linden, New Jersey

19. Clary Multiplier Corporation
425 East 54th Street
Los Angeles 12, California

20. Cobell Industries, Inc.
401 Lake St. P. O. Box 966
Fort Worth, Texas

21. Collins Engineering Company
9050 Washington Boulevard
Culver City, California

22. Continental Motors Corporation
205 Market Street
Muskegon, Michigan

23. Dothan Aviation Company
Municipal Airport
Dothan, Alabama

24. Douglas Aircraft Company, Inc.
Santa Monica, California

25. Durham Aircraft Service, Inc.
Northern Blvd. at Prince Street
Flushing, Long Island, New York

26. Eclipse-Pioneer Division
Bendix Aviation Corporation
Teterboro, New Jersey

27. Eighth Air Depot, Inc.
Hendricks Field, (P. O. Box 507)
Sebring, Florida

28. Embry-Riddle Company
P. O. Box 668
Miami, Florida

29. Erwin-Clark Corporation
P. O. Box 401
Hondo, Texas

30. Florida Aviation Corporation
Drew Field
Tampa, Florida

31. General Aircraft Company
5512 San Fernando Road
Glendale 1, California

32. General Aviation Equipment Company, Inc.
69 Public Square
Wilkes-Barre, Pennsylvania

33. Globe Aircraft Components Corp.
North Side Station
Fort Worth 6, Texas

34. Globe Industries, Inc.
28 West 44th Street
New York 18, New York

35. Goble Aircraft Specialties, Inc.
135-06 Northern Boulevard
Flushing, Long Island, New York

36. Grand Central Air Parts Co.
1310 Airway
Glendale 1, California

37. Hartwell Aviation Supply Co.
3417 Crenshaw Boulevard
Los Angeles 16, California

38. Luke Harris Industries, Inc.
Willow Run Airport
Willow Run, Michigan

39. G. W. Holmes Company
196-208 East Gay Street
Columbus 15, Ohio

40. Irving Air Chute Company, Inc.
1670 Jefferson Avenue
Buffalo 8, New York

41. Jack & Heintz Precision Industries, Inc.
Cleveland 1, Ohio

42. Lamson and Sessions Company
Cleveland 2, Ohio

43. Link Aviation Devices, Inc.
Binghamton, New York

44. Lodwick Industries, Inc.
Lodwick Airport
Lakeland, Florida

45. S. A. Long Company
232 Forth Market Street
Wichita 1, Kansas

46. Lynchburg Air Transport & Sales Corp.
Preston Glenn Airport
Lynchburg, Virginia

47. Maxwell Associates, Inc.
15 Moore Street
New York 4, New York

48. Mirax Chemical Products Corp.
24 Vassar Drive
Dayton, Ohio

49. New Mexico Aircraft Sales, Inc.
P. O. Box 157
West Mesa Airport
Old Albuquerque, New Mexico

50. Northwestern Aeronautical Corp.
1902 W. Minnehaha
St. Paul 4, Minnesota

51. Pacific Airmotive Corporation
1628 McGee Street
Kansas City 8, Missouri
or
52. 6265 San Fernando Road
Glendale, California

53. Page Airways, Inc.
Municipal Airport
Rochester, New York

54. Clarence E. Page
Hangar No. 3, Municipal Airport
Oklahoma City, Oklahoma

55. Parker Service Agency Division
The Parker Appliance Co.
1732 S. Euclid Avenue
Cleveland 12, Ohio

56. Piedmont Aviation, Inc.
Smith-Reynolds Air Port
Winston-Salem 1, North Carolina

57. Pioneer Parachute Co., Inc.
Forest Street
Manchester, Connecticut

58. Piper Aircraft Corporation
Lock Haven, Pennsylvania

59. Thor Solberg Aviation Company
Solberg-Hunterdon Airport
Whitehouse, New Jersey

60. Sperry Gyroscope Company, Inc.
Great Neck, L. I., New York

61. Reid & Cook Electrical Contractors
4th and Williams
Renton, Washington

62. Resort Airlines, Inc.
Box 130, Southern Pines Airport
Southern Pines, North Carolina

63. Ryan Aeronautical Company
Lindbergh Field
San Diego 12, California

64. Schneck Engine Service & Supply
Washington Park Air Port
Homewood, Illinois

65. Schuster Electric Company
321 Sycamore Street
Cincinnati 2, Ohio

66. Simsbury Flying Service
Simsbury, Connecticut

67. Snyder Aircraft Corporation
5036 W. 63rd Street
Chicago 38, Illinois

68. Pyrometer Service Company
228 River Road
North Arlington, New Jersey

69. Southport Aero Service
Cedar Avenue
Rosemont, Minnesota

70. Ranger Aircraft Engines
Fairchild Engine and Aircraft
Farmingdale, New York

71. Stanco Company
1914 Canton Street
Dallas 1, Texas

72. Supply Division, Inc.
Lambert Airport
Robertson, Missouri

73. Switlik Parachute Company, Inc.
Lalor and Hancock Streets
Trenton, New Jersey

74. Toth Aircraft & Accessories Co.
220 Richards Road
Municipal Airport
Kansas City, Missouri

75. United Aero Service, Inc.
P. O. Box 1028
Delta Air Base
Charlotte, North Carolina

76. U. S. Aeroplane Carriers, Inc.
Dover, Delaware

77. Van Dusen Aircraft Supplies, Inc.
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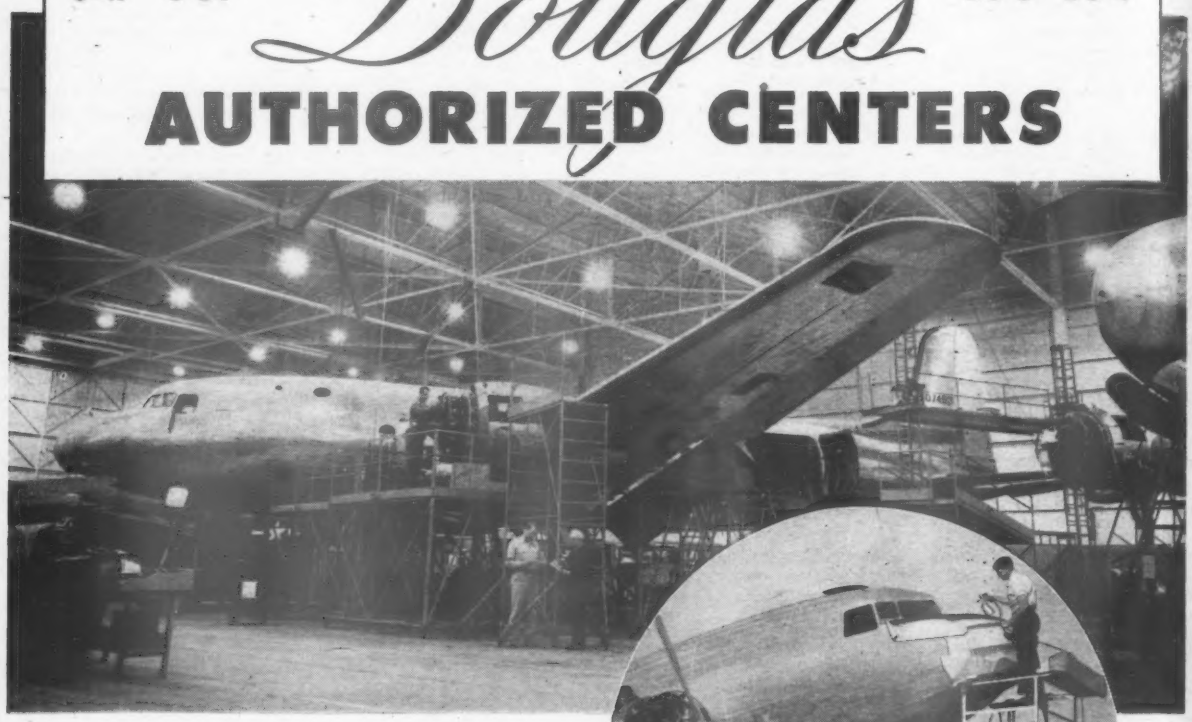

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Write: Service Manager, Douglas Aircraft Company, Inc., 3000 Ocean Park Boulevard, Santa Monica, California, for name of Douglas Authorized Conversion Center or Douglas Approved Service Center nearest you.

SPARE PARTS WARRANTY POLICY. This company's standard warranty policy as applicable to new spare parts will be extended only to parts manufactured by the Douglas Aircraft Company. Such warranty applies whether the parts are supplied directly by Douglas, obtained from Government sources and supplied through Douglas in accordance with the War Assets Administration agency agreement, or procured by the ultimate consumer through authorized dealers or agents of Douglas. Warranty adjustments, in all cases, will be handled through the procurement source.

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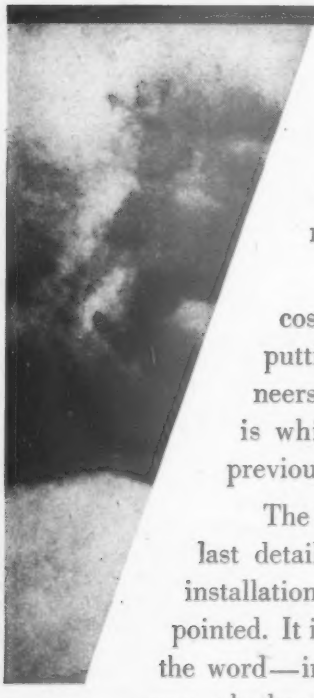

Every corporation ever to buy an airplane for business use, every flight operator ever to fly a plane for charter or in taxi service must deal with "cost per mile per passenger." To such plane-owners the new Beechcraft Bonanza will be vitally important news!

Luxuriously comfortable, high-speed air transportation *ought* to cost more than any other kind. Yet the Bonanza comes close to putting air travel costs *on the ground!* The reason: Beech engineers have built an airplane which, for its speed, payload and range, is whisked through the air on *less than half the horsepower* previously required for equivalent performance.

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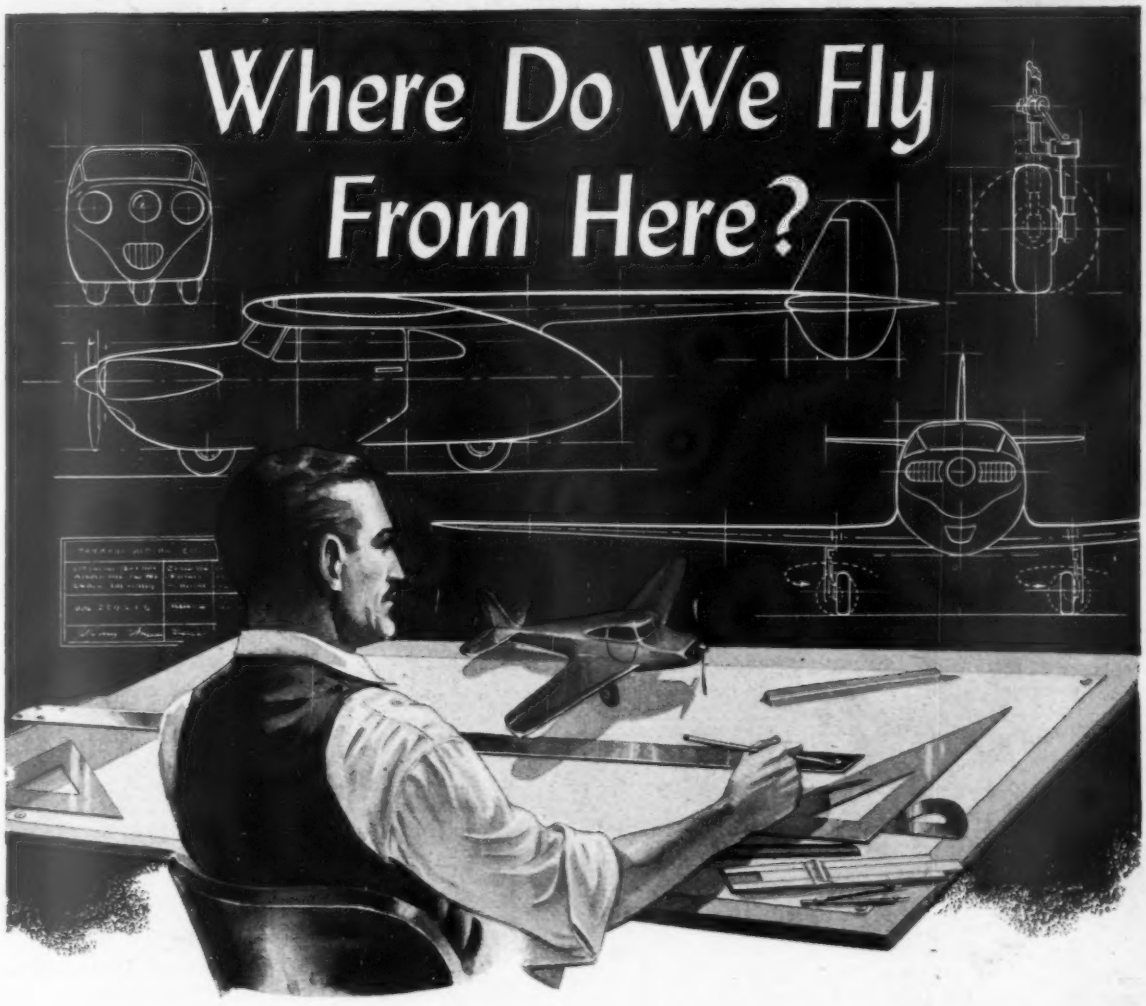
***There's nothing more to buy***

BEECHCRAFT Bonanza Model 35

***Just step in and fly!***

# Where Do We Fly From Here?



By T. P. WRIGHT
Civil Aeronautics Administrator

## HERE ARE SOME GOALS FOR BETTER LIGHTPLANES BY 1948

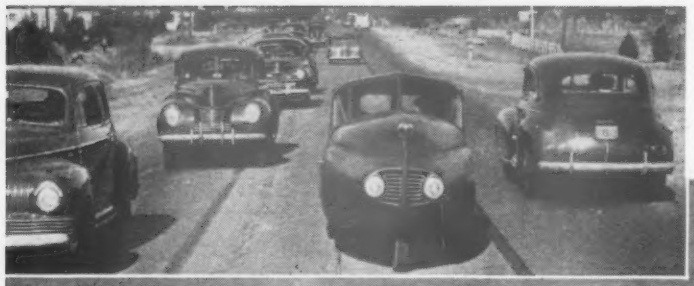
THE First Annual National Aircraft Show gives us our first opportunity to assess the tremendous wartime progress made by aviation and its allied industries.

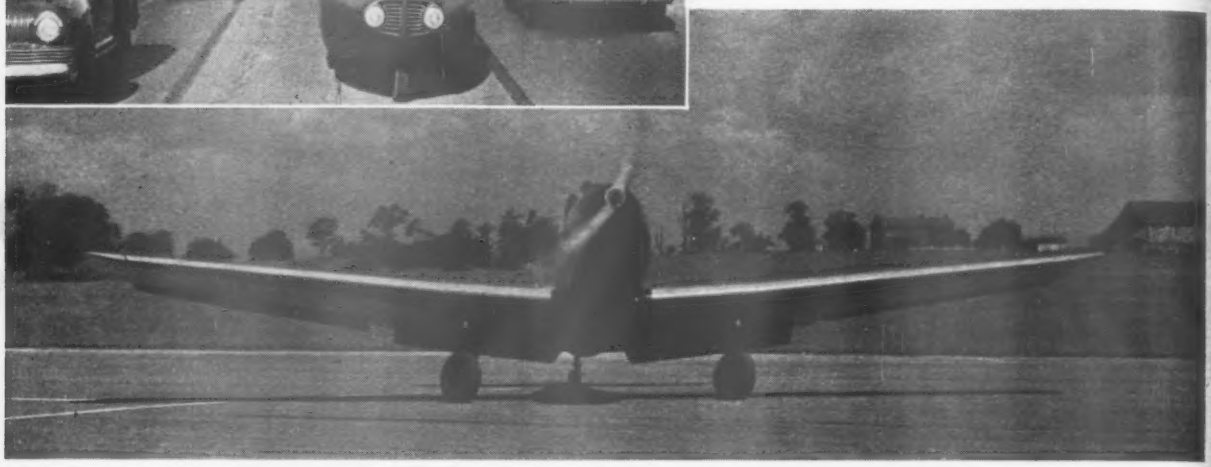
We read here and have seen there various examples of such developments. But now for the first time we have grouped under one roof the complete array of products which the industry hopes will meet and even stimulate the already large consumer demand.

We are witnessing in this show a remarkable record of achievement—the developments and devices which made American aviation pre-eminent in the military field. And we have learned how this knowledge is being adapted for peacetime service.

Aviation, like every other American industry, has been forced to contend with difficult reconversion problems. There has been a scarcity of key parts and materials. Labor costs have risen, and war contracts tied up until the war's very end the personnel and tools necessary to the design of peacetime personal aircraft. Yet in spite of these very difficulties great progress has been made. Already there is evidenced a real attempt to adapt war-time developments to specific uses on personal aircraft.

This attempt is even more promising when compared with that made by the automobile industry which this year has introduced few if any changes because of the same handicap. Indeed, when the relative size is considered, the aircraft industry possibly is performing a better task in quantity production than is the automobile industry.





**Flying cars,** like Southern Aircraft's roadable unit (left) and cross-wind landing gear such as Fairchild's installation (below) are "musts" in future plane design, says author. Roadability solves transportation problem to and from ports, while swivel gear permits use of single strips in downtown areas.

In the month of August, 1946, more than 4,600 civil aircraft were manufactured. This is equivalent to about eight months' production in the peak pre-war year of 1941. These figures are hopeful portents that aircraft manufacturing is at least on the road toward becoming a mass production industry.

I think everybody recognizes, however, that we must approach the aviation market from a long-range point of view. The planes that are for sale today will satisfy a demand that has been pent up for the past five years. They must be improved continuously, however, if we are to expand the base of aircraft ownership during the next five years.

Certain essential improvements are possible in the near future. Others can be perfected within a few years if we apply ourselves to the task.

If I were a prospective airplane purchaser who was asked what features he particularly would like to see incorporated in the displays at the 1948 show, here are two I would put at the head of my list.

The first would be a cross-wind landing gear. I would want this device because it would make it possible for me to get closer in my airplane to so many places where I want to go. With such a gear I might be able to land on a strip in or near the downtown areas of all but the biggest cities. Without it, I would be forced to use multi-runway fields usually some distance from the center of town.

Second, I would want a personal plane that is quieter, both inside and out. I would want a lower noise level inside for greater comfort, even if it meant some sacrifice of engine efficiency (experiments by the National Advisory Committee on Aeronautics indicate, however, that engines can be muffled without paying a high price in performance). I would want a plane that is less noisy to the man on the ground for the selfish reason that I depend on his good will for convenient landing places. (As the official responsible for administering the Federal Airport Act, I am perhaps more conscious of the latter factor than is the average airplane buyer, but it is just as important to him in the long run.)

There are other features I would want, of course, such as greater speed, increased seating and baggage capacity, and the like. I do not list these because they already are on the way, and appear to a substantial degree in some of this year's showings.

For my next airplane—the new one I might buy in the 1950s—I would hope to see even more revolutionary advances. Roadability, for example, would make the airplane attractive to tens of thousands of new customers, and when I consider the rapid progress we have made in military and transport planes, I see no reason why we could not achieve such a goal for the personal plane. If we do not take the way of roadability, we should seek equivalent advantages by reducing drastically the space needed for landing and take-off, by making possible slow-speed operation during restricted visibility. Design innovations of more "built-in" safety will always be a necessity.

During the war, the aircraft industry demonstrated its genius for doing the difficult today and the impossible tomorrow. I hope that the series of aircraft shows now starting will be marked by a continuation of such achievement. The Civil Aeronautics Administration stands ready to co-operate in this peacetime effort of the industry to the full limit of its powers. END

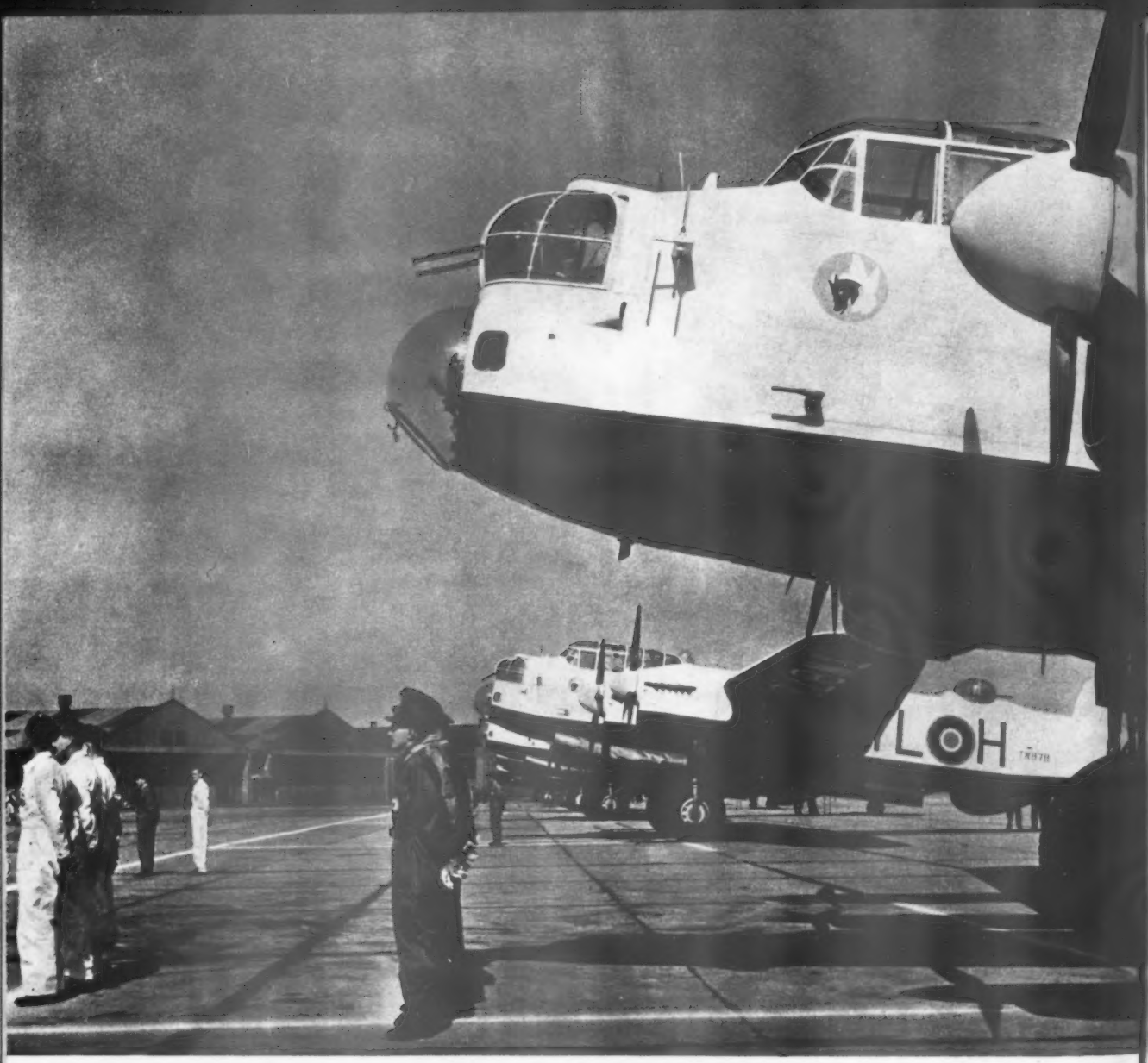
## FLYING PREVIEWS THE NATIONAL AIRCRAFT SHOW

A 32-page pictorial repor on today's lightplanes, radios, engines, propellers and instruments—many which are on display at the Cleveland Air Show November 15-24—begins on page 67.

**Leaving England,** 12 of the 16 Avro Lancasters have already formed up for first leg of flight to Mitchel Field.

# 'Operation Friendship'

**Arrival at Mitchel Field was marked by military ceremonies. The Lancasters averaged 196 m. p. h. for England-to-U. S. flight.**



**Military ceremonies** on arrival at Mitchel Field were brief as high-ranking AAF officers greeted the 207-man RAF delegation that flew the Atlantic to attend Air Force Day celebrations. The planes were painted black and silver, a special color scheme for U.S. tour.

## *SQUADRON 35 IS FIRST BRITISH FLEET TO VISIT U.S. SINCE WAR OF 1812*

FOR the first time since Gen. Italo Balbo led 25 Italian Savoia seaplanes to the 1933 Chicago World's Fair, the U. S. played host to a foreign air armada. Last July, 16 RAF Avro *Lancasters* flew the Atlantic to this country under the command of 23-year-old Wing Comdr. (rank equal to a U. S. lieutenant colonel) Alan J. Craig for the Air Force Day celebration.

For over a month the British bombing fleet visited AAF installations and cities from coast to coast. It was a revisit for some of the crewmen who took their flight training here during the war.

The squadron, officially known as RAF Squadron 35, left its home base at Graveley, England, on July 9 for the 18,000-mile tour. Stopping en route at St. Mawgan, Cornwall; the Azores and Newfoundland, it arrived exactly on schedule at Mitchel Field, N. Y., at 4 p. m., July 17.

The 207 RAF men were met with flags flying and bands playing, but all their activities were not so military. They were taken to the trotting-horse races at Roosevelt Raceway, to Jones Beach for rollerskating and picnicking, dinner-dances on Long Island and to a baseball game. Escaping from planned entertainment, they went on shopping tours—a wonderful treat to Englishmen whose counters at home are still quite empty.

They left New York for Scott Field, Ill., on July 21 and from there motored to St. Louis, Mo., for more parties, an open-air opera and "the largest steaks we have ever

Reviewing honor guard, from left, Col. L. R. Parker, Group Capt. H. C. M. Collard and Wing Comdr. Alan J. Craig, who led flight.

Welcoming address, given by Lieut. Gen. George E. Stratemeyer, marked end to formal ceremonies, beginning of the informal fun.

seen. . . . Those steaks," reported Wing Commander Craig with amazement, "overlapped our plates . . . we couldn't eat them all."

Bounteous U. S. food supplies worked a spell over the Britishers who have been living under rationing in England. The egg and milk supplies were a special treat.

The next leg of the flight was to Lowry Field, Colo., on July 25. Here the visitors met the only criticism of their trip. Civic authorities had asked them to fly over the city of Denver in formation, which they did at 2,500 feet. The roar of the *Merlin* engines caused 400 citizens to phone complaints about " all this low flying."

Los Angeles was reached on July 28 when the squadron landed at Long Beach. Here the men were entertained by Millionaire Atwater Kent at a "circus party," where they rubbed shoulders with clowns, elephants, monkeys and movie stars. It was here that Squadron Ldr. Jeffrey Page announced his engagement to Pauline Bruce of the movies.

In California they also visited the Douglas aircraft factory and flew in formation over the Good Samaritan Hospital, dipping their wings to Howard Hughes who was then recovering from his crack-up in the F-12.

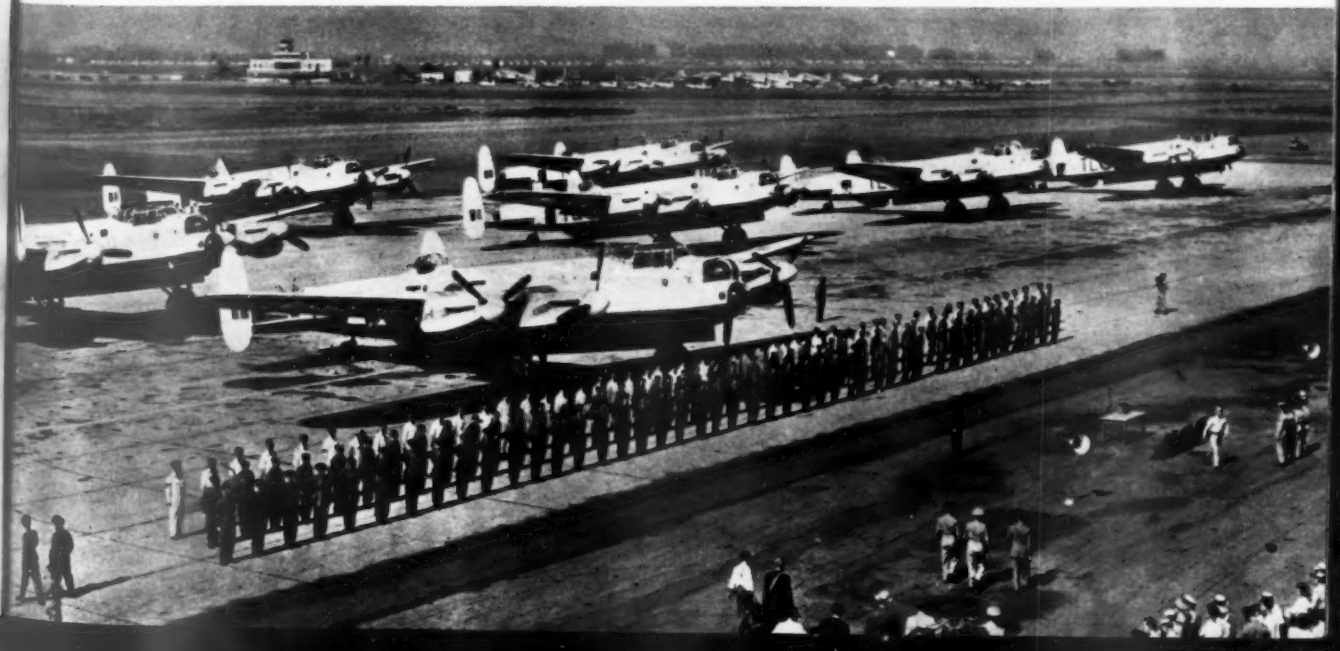
August 3 they landed at Kelly Field, Tex., where most saw their first rodeo and were intrigued by cowboys and cowgirls dancing to hillbilly music.

They arrived at Andrews Field, Md., August 7 and went over to Washington for a week's visiting in and around the nation's capital. During their Washington stay, they made a flight over Philadelphia, Baltimore and Atlantic City. They also were taken on a tour of the Fairchild factory at Hagerstown, Md., where they watched a demonstration of the *Packet*. They marveled at this cargo plane when it "took off in 550 feet and climbed literally on its tail."

Leaving Washington they flew over Springfield, Hartford, Boston and Worcester, landing at Westchester Field, Mass. In Boston they were given a "Tea Party" and taken on a tour of Bunker Hill "where the British did cause the Americans some trouble, you'll remember. . . ."

New York, first and last port of call, was reached August 18 and left in a wake of splashy parties on August 22. Visitors and hosts had had a good time. END

**Los Angeles** military turned out to meet RAF crews when they landed at Long Beach. In city, visitors toured motion picture studios and Douglas aircraft plant, were guests at a lavish party. RAF tour was token repayment of visits to Britain by U. S. planes during war.



# Fun at Elmira

By JOHN H. LANCASTER
New York editor of FLYING

FUN was the chief objective of the thousands of aviation enthusiasts who gathered at Elmira, N. Y., this summer for the 13th National Soaring Contest. But most of the spectators and all the contest participants would tell you that extremely important purposes are served by those who practice the art of motorless flight. They point out that besides being a wonderful sport, soaring gives the best and cheapest sort of flight training and supplies the sciences of aircraft construction, flight and meteorology with the most practical research material available.

Pilots and designers who gather such information by their work with silent wings are primarily interested in the sheer sport of gliding. Material rewards offered national soaring contestants in the form of prizes are infinitesimal, for instance, compared with those offered powered-craft competitors in the National Air Races.

John Robinson of Altadena, Calif., national soaring champion in 1940 and 1941, outscored his nearest competitor in the field of 68 contestants by 799 points to win

**Sailplanes line up** at Harris Hill, Elmira, N. Y., where 49 gliders and 68 pilots competed this year in 13th National Soaring Contest. Site is same on which first contest was held back in 1930. Increased participation this year required use of an alternate airport.

## *Glider enthusiasm reaches new high at National Soaring Contest.*

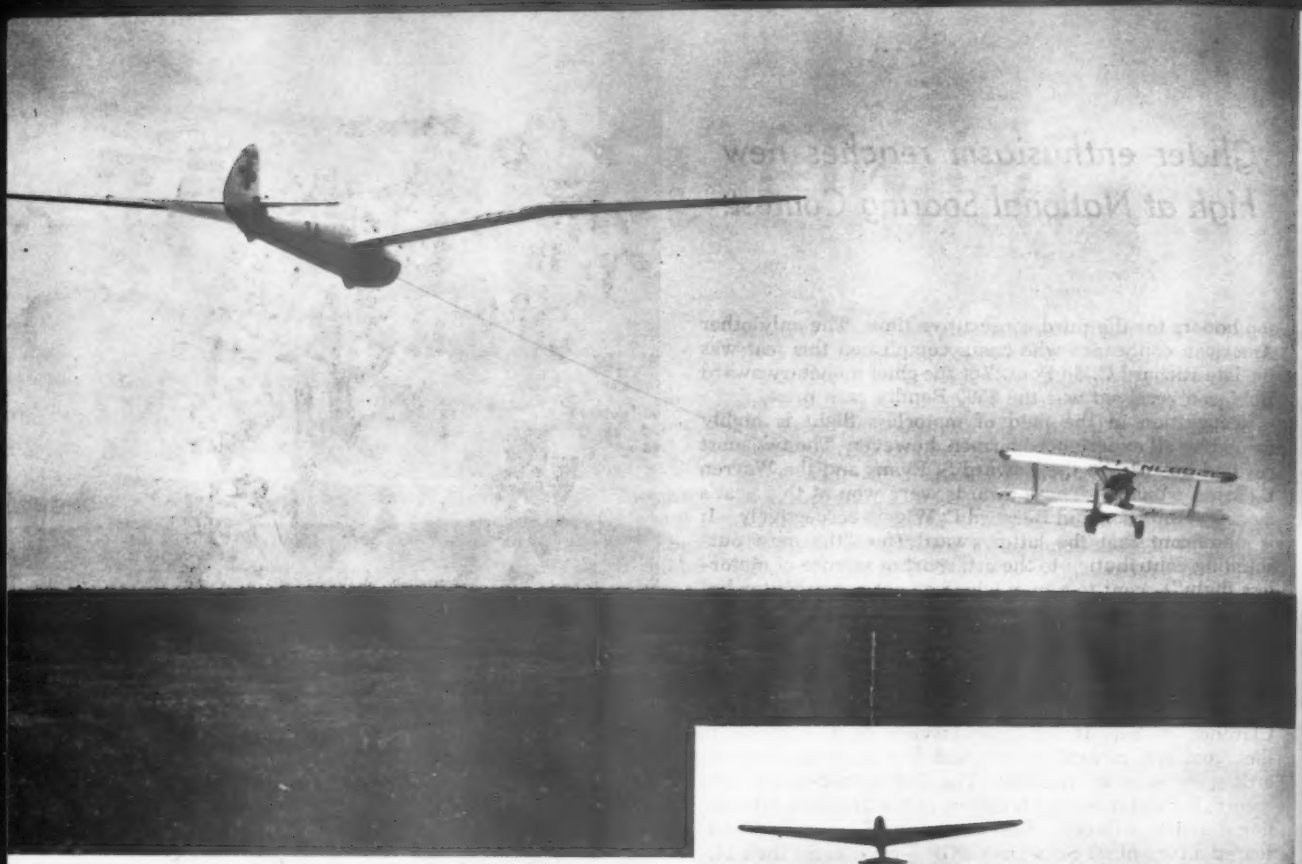
top honors for the third consecutive time. The only other American contestant who has accomplished this feat was the late Richard C. du Pont. Yet the chief monetary award Robinson received was the $500 Bendix cash prize.

Recognition in the field of motorless flight is highly valued by all experienced airmen, however. The two most coveted honors are the Edward S. Evans and the Warren E. Eaton trophies. These awards were won at this year's meet by Robinson and Bernard L. Wiggin respectively. It is significant that the latter award (for "the most outstanding contribution to the art, sport or science of motorless flight") went to a man who was not a competitor but the meteorologist for the contest. That was one of the many things which marked this year's meeting as something more than a mere contest.

As contests go, the national meet was nothing special. Only one American record was broken—Robinson and Clarence W. See, Jr., of Baldwinsville, N. Y., did that in the "goal and return" event—and few international records were even approached. The Robinson-See 100-mile record, for instance, was far short of the 213-mile international mark. George E. Tabery, of Saybrook, Conn., soared a two-place Schweizer SGS 2-8 to "more than 14,000 feet"—but the American-held international record is much closer to 20,000 feet. And the longest flight of the meet—Robinson's 187-mile glide—was 113 miles short of his own American mark and 278 miles short of the inter-

**Spectators** thronged field, despite poor weather, throughout 15-day contest. Launchings kept to schedule even in midst of mild showers.

**Army gliders** towed by Commando swept field in low-level demonstration of military uses of motorless craft.



**On "guinea pig" flight**—first made each day—German Guppingen piloted by J. S. Charles is towed aloft by a Boeing Kaydet. If flight proves soaring conditions favorable, others are launched at once. Of 738 contest launchings, 506 were by plane tug, 232 by an Army jeep.

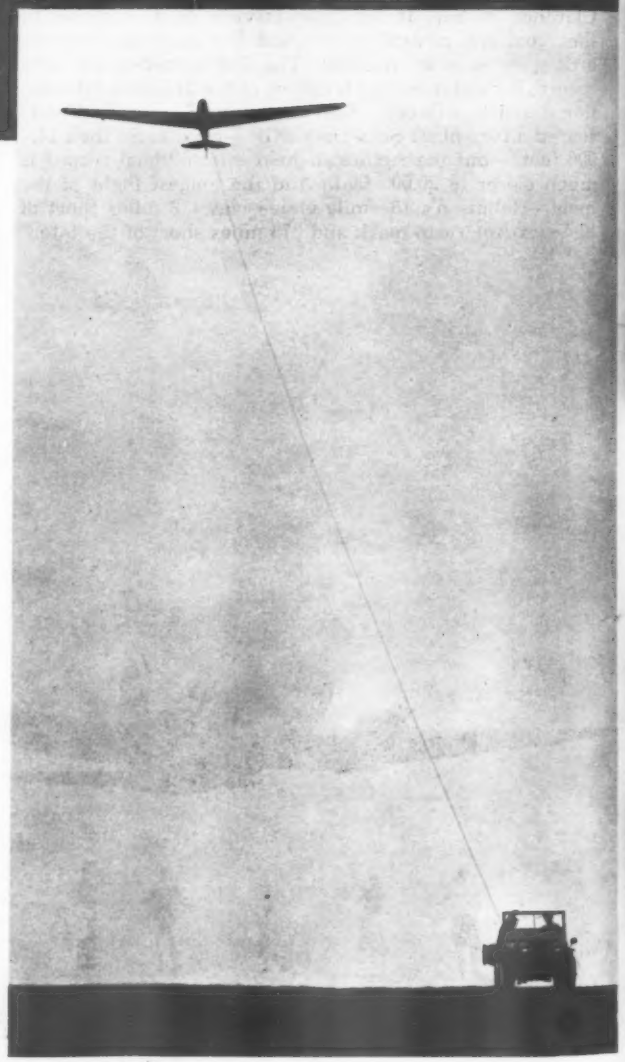
national record. And so the story went. Though a total of 738 contest flights were made and the motorless craft were aloft 375 hours to fly a total distance of 6,600 miles, there was nothing unusual, certainly nothing spectacular, about this year's version of the National Soaring Contest.

There were obvious reasons why the 1946 meet was a routine affair. Weather was poor—Meteorologist Wiggin pronounced only two of the 15 days "perfect for sailing." Many launchings were made in the midst of mild showers.

Another handicap was the planes themselves. Of the dozen or more types among the 49 competing craft, only one (the SGU 1-20 utility glider) was a post-war model—and, except for tapered wings, it was identical with the pre-war SGU 1-19 trainer. Although there was a Polish *Orlik*, a German *Guppingen* and an English-designed Kirby *Kite* (made in the U. S.), most of the planes were U.S. war surplus. One of the craft (a one-place, utility-type Franklin) was a veteran of the first American contest 16 years ago.

In addition to poor weather and obsolescent equipment, contestants found the air a bit more crowded than it was at the last meet, five years ago. (This condition led to the first major accident in the history of the contests. Two participants flying a two-place glider were killed when a Piper *Super Cruiser* collided with their craft in mid-air.)

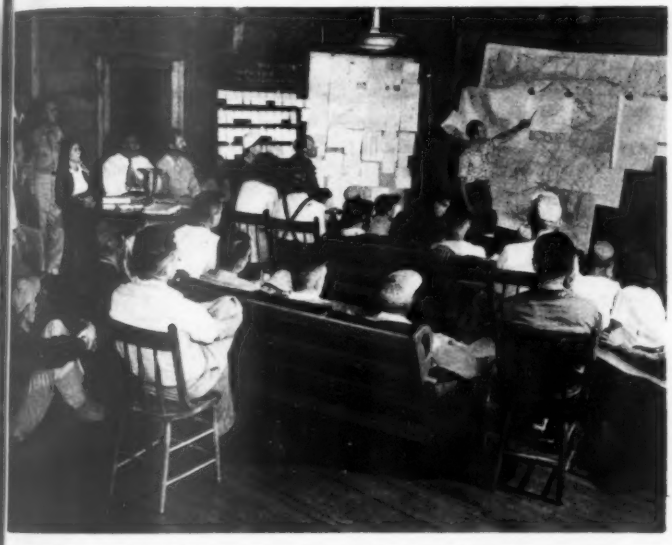
Despite these handicaps, huge crowds that gathered from all over the U. S. and from many foreign countries thronged Harris Hill each day from the time of the "guinea-pig" flight until the last "goal-and-return" trip was completed. Attendance and participation were so increased this year that part of the events had to be run off at Chemung, Elmira's commercial airport, located at a



**Tow limit** for jeep is maximum altitude sailplane can attain using a 500-foot tow-line. Glider pilot above is just about to cut loose.

**Bunk-house flying** in one of the 10-man pilot's quarters on Harris Hill evokes gestures from Robinson (center, rear) winner of last three meets.

**Chow line** provided tasty food for the contestants. Harris Hill hangars, dining hall and barracks were made possible through a Government grant.



**Daily weather briefing** charted thermals, high and low pressure areas, humidity. Summer thermals rise from below "The Hill" at mid-morning.

**Weather data** were compiled early each morning by powered aircraft. Above, Meteorologist Wiggin removes barograph from its wing cradle.

**Weather men** also compiled contest statistics. Here a glider pilot turns in his barograph which will be checked to determine altitude he reached.

**Refuge from** unfavorable weather was necessary on many contest days—glider wing sheltered this group from rain. Note jeep's tow pulley.

**Assembling** German Guppingen, Eastern Air Lines Pilots J. S. Charles and F. V. Compton prepare for "busman's holiday." Charles flew sailplane to U. S. altitude record (19,434 feet) in 1934.

**Only couple** in contest, Mr. and Mrs. S. J. Bonn, Hicksville, N. Y., scored 229 and 455 points respectively.

**Only other woman** in contest, School Teacher Alberta Brown, piloted a 16-year-old Franklin utility glider.

**Champion** John Robinson, second contestant ever to win soaring meet three consecutive times, inspects his Ross-Stephens glider. Robinson holds record for longest U. S. motorless flight.

700-foot lower altitude. Such enthusiasm indicates a bright future for motorless flight in America.

Many saw in the daily glider snatch (Army *Commando* pickup of a CG-15 cargo glider) the practical possibilities of feeder-line adaptation which they had only dreamed of since accounts of wartime troop dispersal or the historic glider rescue in Shangri-La Valley were released. Incidentally, WAC Margaret Hastings, heroine of that adventure, was a guest at the meet. Potential flyers as well as airport operators were re-indoctrinated as to the ease and economy of soaring as a training device—actually, gliders are easier and much cheaper to operate than the smallest, most fool-proof plane. Still other visitors were impressed once again with the possibilities of this thrilling sport. While Harris Hill is one of the nation's best-known glider sites, practically every suburb or village can initiate glider activities at a minimum of expense. Such operations as those over desert sands of California, the mountain pocket of Sun Valley, or the river bottoms of Illinois indicate that here is a sport adaptable to any American terrain.

It was glider potential rather than actual achievement that made this year's contest at Elmira so much fun. END

# THE NON-SKEDS

By L. S. WILLIS

*With 2,529 multi-engined planes, the non-skeds fly more aircraft than the regular scheduled lines.*

WHILE flying the lonely Pacific skies, military transport pilots used to hum the ditty:

*"Come, Marie, and fly with me*
*On my knee across the sea*
*In my greasy DC-3"*

These same pilots—all former Army and Navy flyers—today ride the skyways of the world, hauling sleepy passengers and fabulous cargoes over land and water. Occasionally Marie, in a hostess uniform, rides with them—but, alas, on nobody's knee.

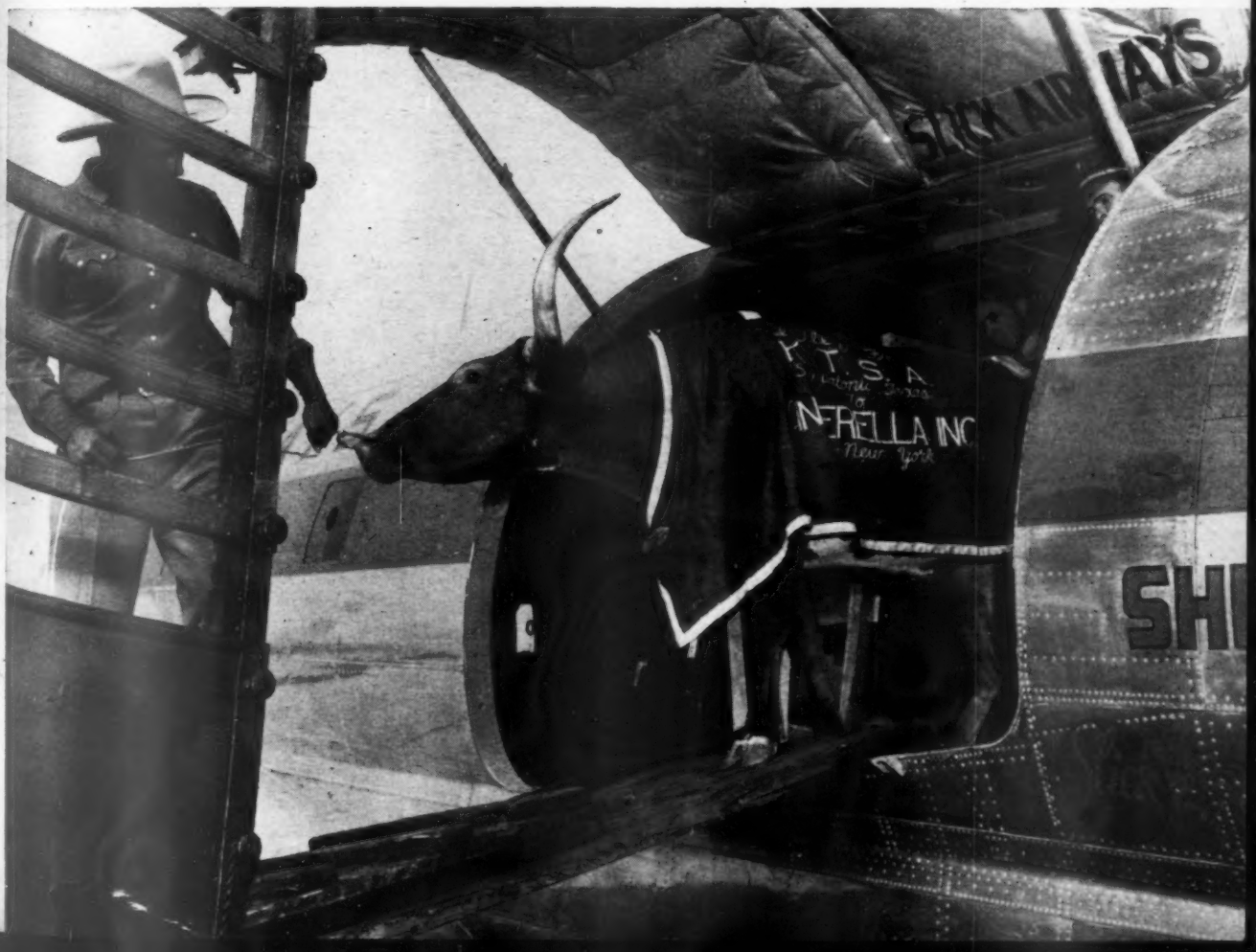
Veterans of World War II have pounded out a brand-new industry since V-J Day, using three ingredients: war-born aviation experience, youthful enthusiasm, and a big stock of surplus military planes.

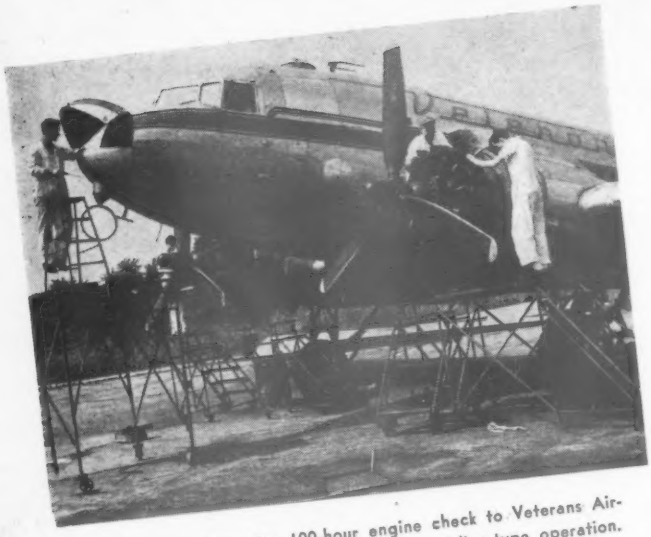
Nobody knew how big this post-war baby had grown in a few short months until the Civil Aeronautics Administration made a survey late last spring. The survey uncovered 2,730 non-scheduled air carriers flying 5,529 aircraft. In comparison, the much-publicized scheduled airlines have a total of less than 700 planes in domestic and foreign service. And when you break those figures down, the record is even more astounding.

"By actual count," exclaimed a breathless CAA press release, "non-scheduled carriers are using 101 Lockheed *Lodestars,* 13 Curtiss *Commandos,* 339 Douglas DC-3s and 76 DC-4s. In addition, they have at least 2,000 smaller twin-engined transports such as Beechcrafts and Cessnas, plus a minimum of 3,000 single-engined transports. . . ."

The difference between these "non-scheduled carriers" and the well-known "scheduled" airlines like Pan Ameri-

**Longhorn steers or people, cosmetics or lobsters—it's all the same to the non-scheduled air carriers who fly anything anywhere.**





**Ex-GI mechanics** give 100-hour engine check to Veterans Airlines DC-3 at Newark Airport—a routine airline-type operation.

can, TWA, and American, should be clearly understood. The "scheduled" airlines operate over established routes at regular intervals, like trains and busses.

The new veteran-operated "non-sked" airlines, on the other hand, will fly anything anywhere—and at any time. They are like aerial taxis or tramp steamers. Without timetables or regular routes, they fly with the seasons, with the crops, and with the tourist trade.

For many years the Civil Aeronautics Board has kept a tight rein on scheduled airlines. Every detail of their operations, from the fare charged to the strength of engine wrist pins, has been investigated, checked, and finally approved by CAA inspectors. One result has been a spectacularly-improved safety record.

Until August 1 of this year the non-scheduled operators were practically free of Government control. As long as their planes and pilots were properly licensed, they flew where and when they pleased, responsible only to their consciences for proper airplane maintenance and safe operation. Lately, there have been fatal accidents.

When non-scheduled operations were puny and scattered, as they were before the war, this situation could be tolerated. But a powerful, robust new industry could no longer be ignored like a poor relation. And it didn't want to be ignored—many non-scheduled operators had been yelling at the top of their lungs for Government regulation for many months before the CAB issued its first regulatory amendments.

These regulations, known as "Part 42," prescribe safety and maintenance standards similar to those demanded of scheduled airlines. They require operators to register with the Board, to keep records, and to equip their planes with suitable instruments. The new regulations require careful maintenance of planes and forbid flying under unsafe weather conditions.

The eager veterans operating these new airlines have shown such imagination and sales initiative—particularly in cargo operations—that they have left regular airline officials gasping, sometimes with admiration, often with envy.

Before the war, freight was an annoying stepchild to the scheduled airlines. Passengers and Uncle Sam's mail subsidy paid the bills. Now these lusty airline newcomers have demonstrated that aerial freight often can pay well; even such things as machinery and vegetables can be profitably carried by air.

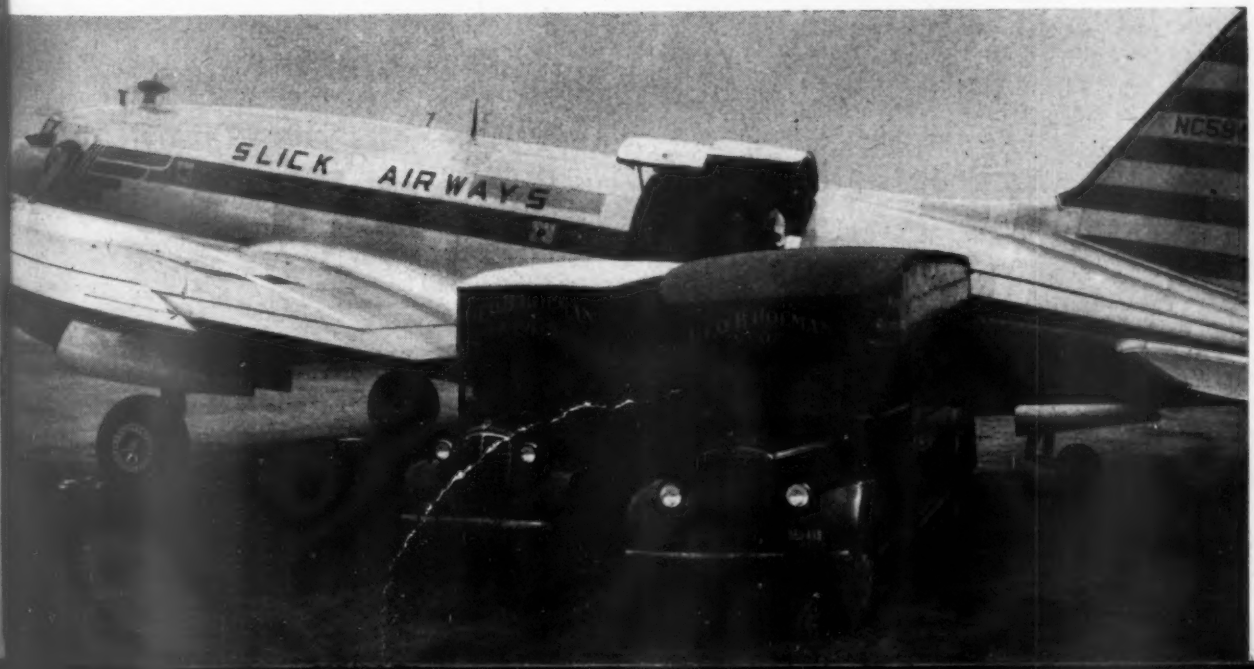
A dazzling vision is dancing before the eyes of scheduled and non-scheduled operators alike. They foresee the day when passenger flights, important as they are, will be dwarfed by aerial cargo operations filling the sky with the products of factory and farm.

National Skyways Freight Corporation, popularly known as the Flying Tiger Line, is typical of the new veteran airlines. In a single month, the line roared from coast to coast with flowers, mag- (*Continued on page* 108)

**California-bound** passengers buy tickets from Veterans' Airlines' Newark office. VAL averages two flights weekly.

**Veterans'** DC-4 transatlantic crew consists of Pilot M. C. Walker, Navigator G. A. Roland, Co-pilot R. N. Broughton, Flight Engineer T. Cowart.

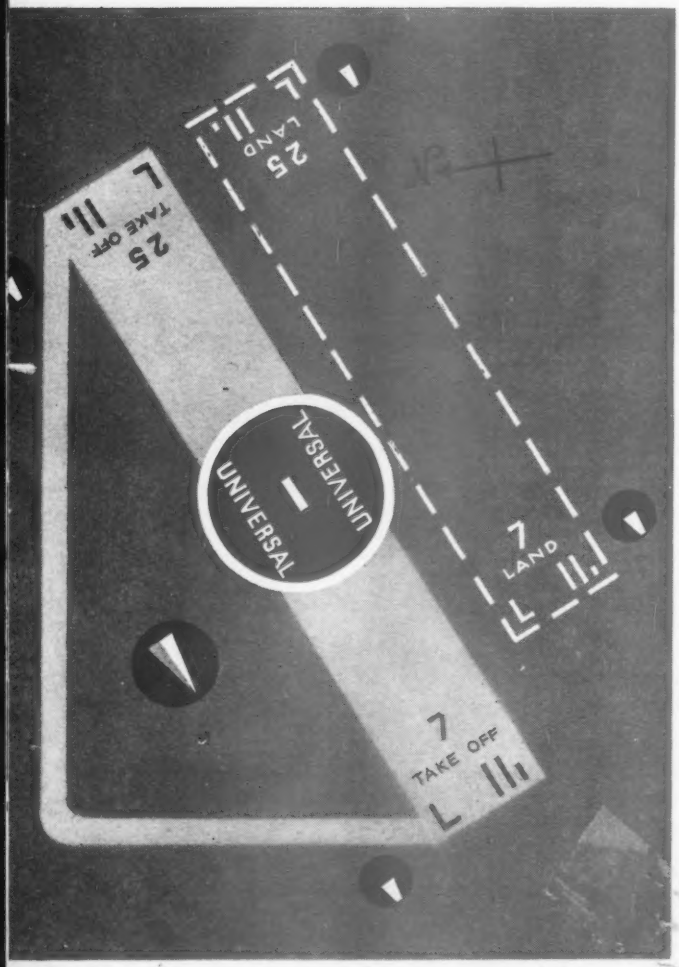
**Five tons of eggs** for European hatcheries (above) are lashed down aboard a non-scheduled DC-4 prior to take-off. Special tie-down techniques, plus loading pallets, must be developed by operators for fragile cargo. Below, a Slick Airways Commando loads from two vans of household furniture at Newark Airport. The 7,725-pound cargo is destined for Los Angeles and will arrive there weeks before a van could transport it. The lower charges and enterprise of non-scheduled operators is revolutionizing such types of aircraft freight hauling.



# Mark Those Airports!

By WILSON BAILEY

*British system of airport markings suggests simple means for making our own ports safer.*




**Marking devices** suggested by author include name of port (white on black) legible at 1,500 feet; landing and take-off areas so marked and outlined with white stripes when unpaved; compass heading (less last digit), field pattern ("L" or "R"), runway length (Army style, one bar for each 1,000 feet) and wind socks at ends of each runway. Socks and centrally-located tetrahedron should be standard color on black base.

EVERY pilot knows that American airport markings are an uncontrolled hodge-podge—when there are any markings at all. Airport operators are rugged individualists who mark their fields according to personal fancy, and flyers heading for unfamiliar ports have little assurance that they'll find any visual aids to help landing. In increasing numbers private flyers are demanding that they be given a standard system of markings—and airport conditions that match such markings when they are used.

The demand is not unreasonable. Just such a system has been in use in England (on ports controlled by the Royal Air Force and the Royal Navy) for some time. Our own CAA-approved system (not mandatory) standardizes only runway length, approach and heading symbols.

The British system of airport markings centers in an easily distinguished "signal square," 40 feet to a side, located near the control tower. This is painted black and outlined in white. A white wind tee is placed within it. (See illustrations on the adjoining page.)

Close beside this square, two white letters 12 feet in length are displayed on a black background to identify the field. If right pattern prevails, a red right-handed arrow appears in the signal square and, for the benefit of those on the ground, a green flag is hoisted on a signal mast which rises from the square. Absence of such signals indicates a left-hand pattern.

A yellow six-foot pyramid hoisted on the signal mast indicates that a beam-approach landing or practice run is taking place and that pilots must exercise caution.

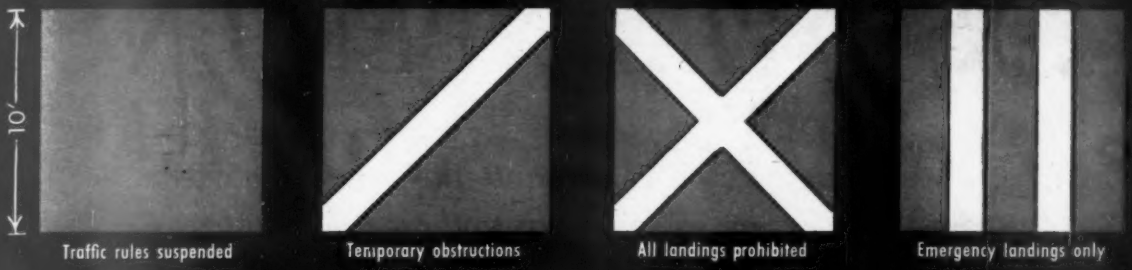
A black ball on the mast indicates that the wind is variable and less than eight m.p.h., and that the landing should be made in accordance with the tee.

A square panel in the signal square with yellow diagonal bar over a red background shows that some dangerous condition exists—contractors at work on the field, and that landings must be made cautiously. If there is a yellow diagonal cross on the red panel, landing is prohibited.

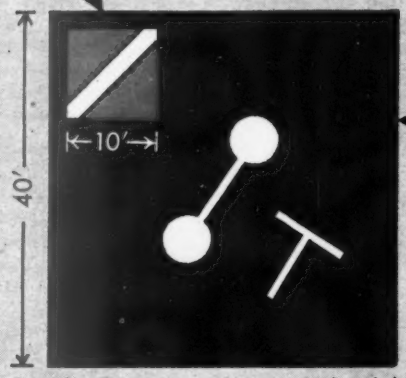
When only emergency landings are permitted, a red square with two parallel yellow stripes appears within the black signal square.

A large white dumbbell in this area indicates that planes must keep to runways and taxi strips. A black bar across each end of the dumbbell signifies that taxiing on the adjacent [illegible] is permitted. A red "L" across the bar of the [illegible] dumbbell means that lightplanes may land on special grass areas shown by white corner markings and that taxiing of light air- (*Continued on page* 112)

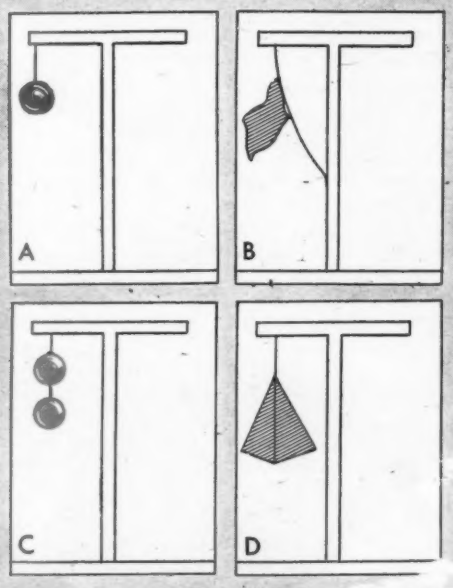
# STANDARDIZED AIRPORT MARKING SYSTEM USED BY BRITISH



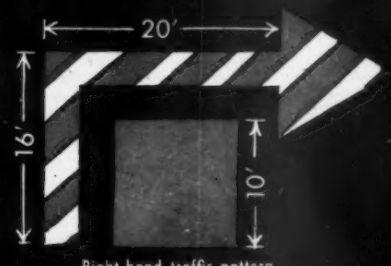

Warning symbols as to unusual field conditions comprise 10-foot squares of various designs placed in the upper left corner of the 40-foot signal square. Absence of such symbols indicates that normal flight conditions and rules are in effect. (Color scheme used is yellow stripes against a red background.)




Signal square warns: obstruction ahead; keep to the runways. It also gives wind direction.




Signal staff in center of square [illegible] the ground. Signals above read: (A) Wind light, observe wind tee; (B) use right-hand [illegible]; (C) caution: glider take-offs and (D) blind landings are being made on field. [Colors: (A) black, (B) green, (C) red and (D) yellow.]




Right-hand traffic pattern

Planes must keep to runways

Planes may turn off on grass

Lightplanes may land on grass

Take-off and landing direction

Glider take-offs are in progress

Prevailing conditions of field are symbolized on remaining signal area in the above fashion. See the text for a more detailed description of their meanings.

# FOR SALE: EXPERIENCE

*Meet the aviation consultant—the expert who sells time and money-saving ideas to those who would fly*

By FRANK B. HOWE

YOU consult a lawyer or doctor on legal or medical matters. Why shouldn't there be a professional aeronautics counsel? Frank Argall asked himself that question as he neared the end of five years in charge of ground-training 20,000 AAF, 500 RAF and 500 Eagle Squadron pilots. The answer he came up with is a unique organization called "Argall and Associates," with headquarters at Grand Central Airport, Glendale, Calif. It's an organization that has nothing to sell except aviation experience.

One or another of the Argall associates knows the answer to any problem that troubles the sportsman pilot or yachtsman. Argall, who is 38 years old, knows the answer to more than his share of them. He learned to fly in 1929. He is a graduate of the Pennsylvania Maritime Academy and served 10 years at sea—including four as second officer of the giant transatlantic liner *Washington*. He has spent the past five years as director of ground training for three Army Air Forces flight bases in California. He holds eight certificates in aeronautical and maritime pursuits and is a naval reserve officer.

Organization members take the viewpoint that on an ethical basis their services are comparable to those of other professional men. For a modest fee you can consult them on any matter pertaining to aviation. There are income experts to tell you what sort of an airplane best fits your individual problem, what variety of insurance

**A satisfied customer,** Movie Star Dick Powell waves a pre-take-off farewell to H. A. West, an Argall expert who instructed him in business-wise operation of his plane.

your particular case calls for and how much—though they won't sell you any. Engine and air frame experts will check the plane you're thinking of buying and tell you what condition it's in and whether it's fairly priced. Experienced pilots will help you plan a cross-country flight, pointing out whether the weather is propitious for it, and furnishing sound, experienced advice on any other subjects pertaining to your airplane trip.

Argall and Associates take particular pains with the man who wants to get an airplane and learn to use it but who knows little or nothing about aviation. They have special orientation classes for business men (held two nights a week over a four-week period) that furnish a broad background in fundamentals. The courses give students a basis on which to start flying careers intelligently. The cost is $75.

It isn't a hit-or-miss proposition when a client gets advice. All the facts pertaining to his case are carefully charted. Out of this comes the aeronautical prescription.

Dick Powell, the film star, was a recent client. Accustomed to consulting attorneys when negotiating important screen contracts, it seemed logical to Powell to seek professional advice on aeronautical matters.

No two clients have precisely the same requirements and in Powell's case the preliminary study disclosed that his situation called for converting an experienced yachtsman into an airman. For years the screen star had operated his yacht *Santana* and was familiar with marine navigation, meteorology and the instruments to be found on the bridge of a ship.

But first came the matter of the plane itself. Argall found that Powell's family consisted of himself and his wife, June Allyson, also a screen player. The couple intended to use the airplane almost entirely for pleasure jaunts to various Southern California vacation spots.

A small two-place plane seemed best fitted to the Powells' needs, and an *Ercoupe* was recommended. Factors bearing on the decision were the plane's tricycle landing gear for maximum ground safety; that it is all-metal and certified spinproof; that it is reasonably fast and has adequate range for the use intended; and that insurance would be relatively low.

Actual instruction in flying the plane was given by a capable pilot recommended by the associates. Meanwhile they went about the business of supplementing their client's knowledge of the sea with instruction in air navigation.

Powell already was experienced in celestial as well as practical navigation. The first step, then, was to familiarize him with the difference between aircraft and marine compasses. And to his knowledge of marine navigation had to be added a study of wind velocities and how to allow for drift.

Powell was familiar with advantages of radio navigation from experience with the small radio direction finder of the *Santana*. He quickly agreed with the associates' advice that his airplane be thus equipped. With the radio loop installed, differences between its use and that of the marine version were investigated.

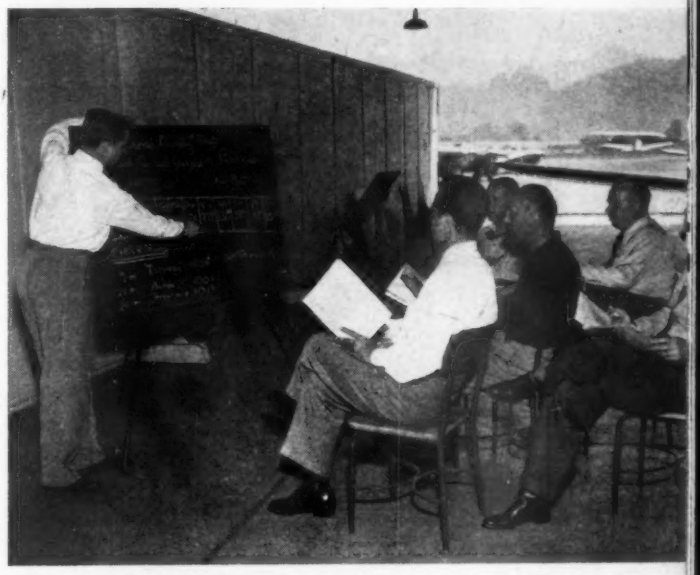
To his understanding of meteorology was added familiarization with the aerial weather map and the method of reading one; the method of obtaining weather information by radio; and the interpretation of sequence reports.

Next came study of the airplane instrument panel which, of course, included some features not to be found on a ship.

Last came mechanical familiarization sufficient to enable Powell to check on repairs, service and maintenance after the ship had been in the shop, and to check the plane before taking off.

As a final addition to the transformation of a seaman

**Powell tells Argall** about the sort of flying he wants to do. Argall and Associates see that his requirements are met with speed and economy.



**Ground schooling** gives Powell (center) and other prospective flyers a better idea of what equipment to buy. Here a cross-country is analyzed.

**Ercoupe is selected** as best suited to Powell's needs. Argall points out radio-navigation equipment he advises the yachtsman-pilot to purchase.

into an airman, he was carefully briefed on the characteristics of the airport at which his plane was to be based, including the traffic pattern, best methods of approach and departure, and the procedure for handling his plane while on the ground.

The whole business comprises personalized service. It involves thorough study of the individual client's requirements. The expert prescribes for each client with maximum directness, speed, thoroughness and elimination of non-essentials.

Diversity of the group's work is illustrated in a course of five orientation lessons (each of three hours' duration) especially set up for Dr. Roger Truesdail, head of the Truesdail Laboratories and president of the Los Angeles Rotary Club. Dr. Truesdail wanted to buy an airplane and fly it for business and pleasure. The Argall service appealed to him as a sound, businesslike way of going about it. The first Argall session was devoted to airport orientation and operations. This included inspection of the control tower, engine shops, overhaul shops, hangars and other facilities, and explanation of how they operate. Hangaring, tie-down and maintenance were discussed. At the same session, the history of CAA and its various functions were explained and aircraft nomenclature was examined.

**Learning weather jargon** as it comes off teletype, Powell prepares himself to fly a plane that has been equipped for all-weather operation.

**Control-room explanation** of traffic rules is Argall's way of checking Powell's knowledge of patterns by concrete examples at the airfield.

The second meeting was devoted to theory of flight; the handling of both conventional and non-conventional types of aircraft; a study of engines, with emphasis on those used in lightplanes; and a review of the various types of lightplanes. Training films were used to supplement this discussion.

Next came a discussion of the various types of insurance and a briefing on basic navigation—including the use of charts, protractor and computer, plus an explanation of how cross-country courses are plotted.

The fourth session took up CAA rules and regulations pertaining to licenses. Fundamental meteorology was outlined, including the procedure for getting weather reports and the method of making radio checks on weather.

The final session reviewed navigation, meteorology and the Civil Air Regulations.

Thus the client was given a broad, overall picture of aviation as it concerns the private flyer. And he was ready to proceed intelligently in starting his flying career.

There are many odd problems brought to the group. One man wanted to know the latitude and longitude of his place of business for use in preparing an aeronautical advertisement. It was located in a valley and Argall determined that the stars would be right for observation about midnight.

Armed with sextant, stopwatch and flashlight, he was busily determining the location when a police prowl car drew up. "What's going on here?" the officers demanded. "I'm shooting the stars," Argall replied, but his answer only complicated matters. It took a lot of credential-producing before the skeptical officers finally left. Argall figured he really earned his $15 fee that time.

Another man came in with an insurance problem. His broker, who knew little of aviation, had prepared some recommendations. Argall carefully explored the customer's flying activities and reduced the recommendations from a $750 premium to a $353 one. The client thought it was well worth the $10 he paid for the service.

A girl of 18 who had just been graduated from high school and wanted advice on an aviation operational career was one client. After investigating her background and personal circumstances, a program was drawn up. She was advised to go after a private pilot's license and, at the same time, attend a local university for airline hostess training, take a business course and training in stenography. She was then to seek a secretarial position at an airport where she could watch for openings in the operations department.

As an unexpected sideline, the organization frequently is called in by movie producers to advise on aeronautical or marine technicalities, to insure screen accuracy.

"We're trying to provide an aeronautical and marine consultant service on the same ethical plane as those who advise on law or medicine," says Argall. "The fees always will be fair; in fact, some of our clients say they're too low. We believe we can pioneer a new and useful field and give service that up to now has not been available. None of us knows all the answers but one or another of the group is an experienced specialist of recognized standing on any subject from which problems arise. We sincerely believe that, with the public flocking to private flying, there is real need for such consultant service."

END

# TWO GIANTS

**Constitution is five times as large as a Cub, has 185 times more horsepower. The transport's two inboard engines have reversible propellers.**

## LOCKHEED AND CONSOLIDATED REVEAL A COUPLE OF WHOPPERS

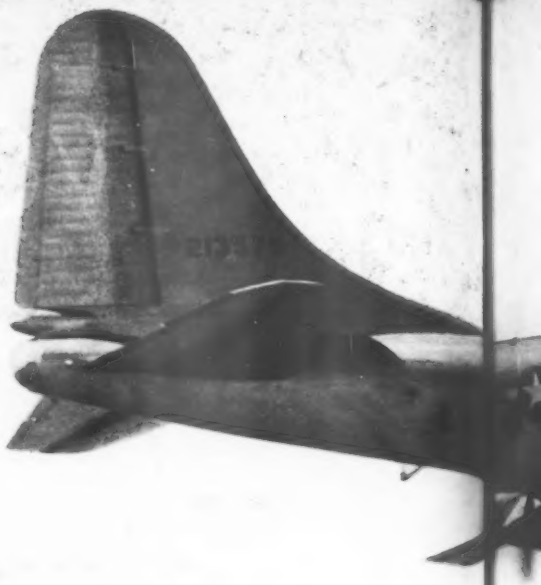
JUST about the time you think you've seen a really *big* airplane, another manufacturer suddenly turns up with something that makes the last one look like a toy. Consolidated, in announcing its six-engined XB-36 for the AAF, made such a comparison with a B-29 (see photograph below). Shortly after Consolidated's unveiling, Lockheed slid open a hangar door and out popped another monster, the long-awaited *Constitution*. It was photographed beside a *Cub*.

The XB-36 is by far the biggest of the two—and the most radical. One of its greatest innovations is its sextet of 3,000-h.p. *Wasp Major* pusher engines, a total of 18,000 h.p. Span of its gigantic wing is

**Consolidated XB-36 is more than 1½ times larger than the B-29. Gross weight is 145,000 pounds higher. It has 9,200 more horsepower.**

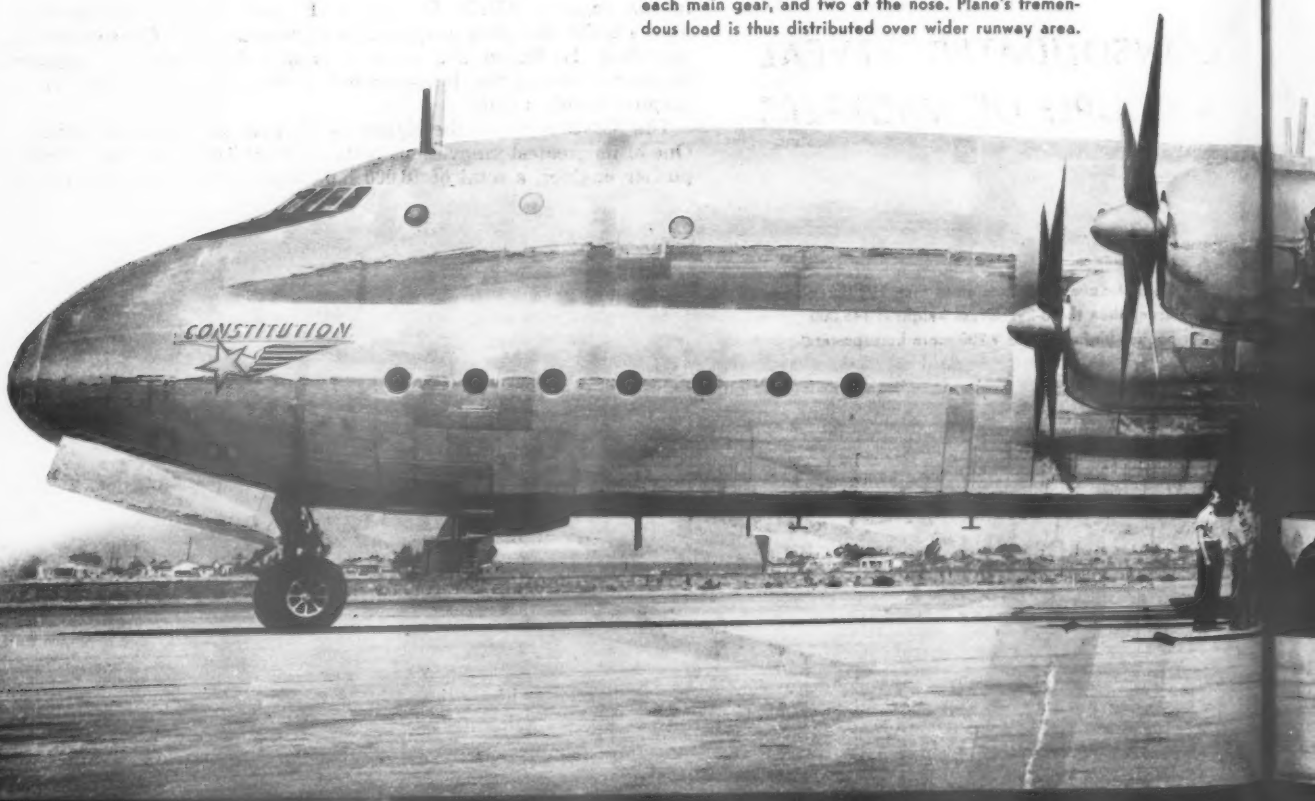
230 feet (189 ft. 1 in. for the *Constitution*), and it weighs 265,000 pounds fully loaded. Originally intended to be a super-long-range heavy bomber, the XB-36 was obsolescent before it ever flew. Its 280-m.p.h. cruising speed is no great shakes compared with what will be demanded of a really modern heavy bomber with jet or gas-turbine power plants. But by "old-fashioned" standards, the XB-36 still is a terrific airplane. It carries a crew of 15 in two pressurized cabins. Its maximum range is 10,000 miles, it carries 21,116 gallons of fuel, and lands at 93 m.p.h. It flew for the first time on August 8. A transport version of this airplane—the XC-99—will carry 400 troops.

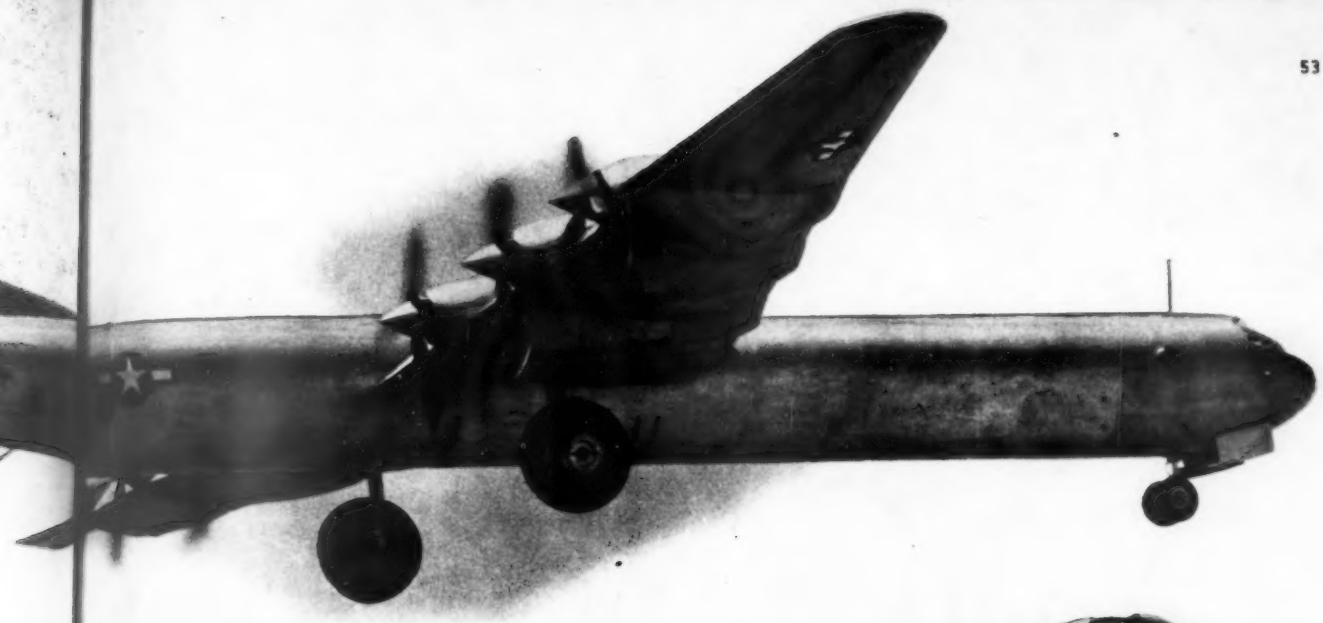
Lockheed's giant also was produced for the armed forces, the Navy in this case. Designed for long-range overseas transport work, the *Constitution* (officially designated R6O) has four 3,000-h.p. *Wasp Majors*, but was designed so that those engines can be replaced with gas turbines at a later date. Fully loaded, the *Constitution* weighs 184,000 pounds, carries a crew of seven, and can carry a maximum of 180 passengers. It will cruise at 270 m.p.h. at 25,000 feet, and its range is 5,000 miles. It has two decks, both of which are pressurized. Stalling speed is 80 m.p.h., service ceiling, 27,600 feet. Several airlines have expressed interest in the *Constitution*, although Lockheed is only building two for the Navy at present (cost: $11,000,000 each). But the cost to an airline customer will be considerably less than that charged the Navy; the Government is footing much of the bill for the basic development of the *Constitution*, as it will with the Consolidated XC-99. END



## CONSTITUTION

Lockheed's superliner rolls on 40 wheels: four on each main gear, and two at the nose. Plane's tremendous load is thus distributed over wider runway area.

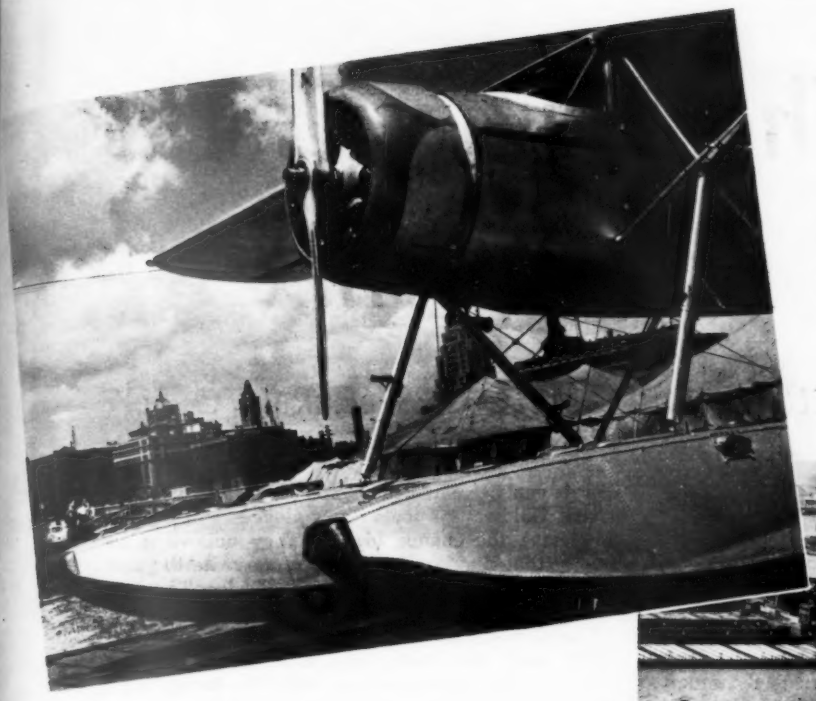




## XB-36

Consolidated's superbomber has huge main wheels, two nose wheels. Tail turret will be radar-operated. Wing is halfway between nose and tail, has slots in tips.

**Downtown air strip** on Milwaukee's lake front is six blocks from the city's center and has both landplane and seaplane facilities. Strip is 2,500 feet long. Businessmen-pilots use it for commuting.



**Business district** of Milwaukee is three blocks away (left). Air strip can take seaplanes of all sizes, and small landplane transports. View below is toward the south. With few exceptions, landings and take-offs are made crosswind. Smoke stacks at end of runway are so high that pilots take extra pains to stay as far away from them as possible.

# Shoppers' Air Strip

*While cities throughout the U. S. talked about downtown air strips, Milwaukee was busy building one.*

YOU will have no trouble at all getting from the airport to downtown Milwaukee in a few minutes. However, the Wisconsin metropolis is the only city in the United States offering such service.

Close-to-town airports have been political footballs for years. Judging by Milwaukee's record, the trick is to get the project away from the politicians. A group of air-minded Milwaukeeans, led by Industrialist Francis J. Trecker, formed the Milwaukee Citizens Committee on Aviation. Soon, on a piece of unused lakefront land, they had built a single strip—2,500 feet long, 500 feet wide. It was graded, surfaced, and a 100-foot strip of asphalt-impregnated cinders was laid down the center. Now Wisconsin airmen are using the strip for fly-in business trips.

Maitland Field, as the strip is known, is just over a year old. Since the day it opened, it has been one of the busiest airports in the entire area. Operation of the field is handled by A. C. "Tony" Lange, who operated the seaplane base before the strip was put in.

Trecker is one of the more frequent users of Maitland Field. He lives on a lake 26 miles from Milwaukee and commutes to the city daily in his Grumman *Widgeon*. His office is a few minutes away. So is the post office (three blocks) and the absolute center of Milwaukee (six blocks). Grumman *Hellcats* and Vought *Corsairs* have safely used the strip. END

# The Flying Clerks of Phoenix

## STORE-SPONSORED CLUB HELPS EMPLOYEES LEARN TO FLY

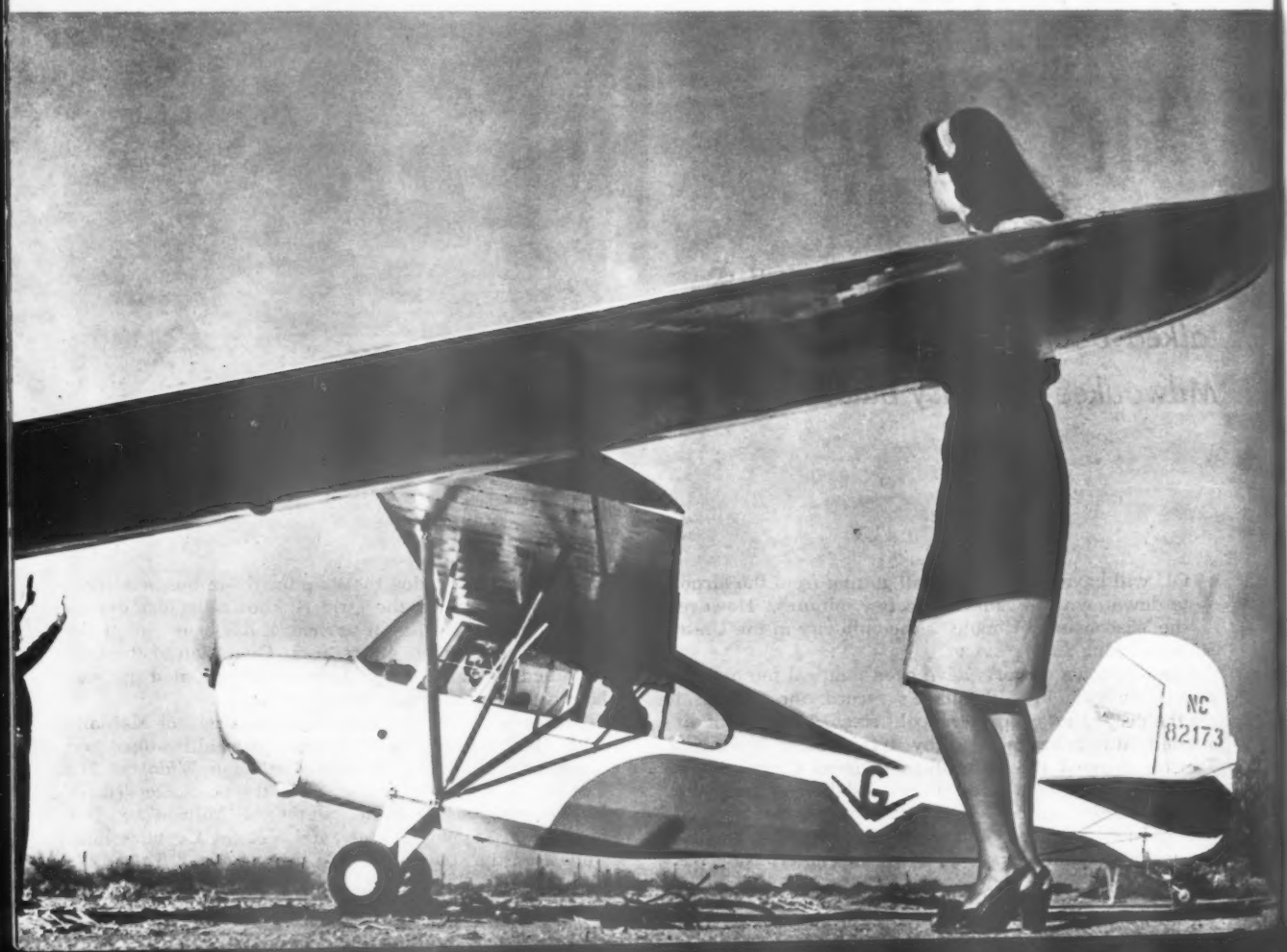
By RALPH F. YAMBERT

JO ANN SNELL, is a pretty brunette department store worker who finds that flying doesn't strain her pocketbook reserves at all. Main reason is that Jo Ann flies with a club and that club is sponsored by her employer—Goldwater's department store of Phoenix, Ariz. Jo Ann and her fellow workers find it easy to learn to fly under the Goldwater plan, and to organize one of the flying picnics illustrated here.

Just as interesting as Jo Ann's picnic is the story of how it can be managed at nominal cost. The plain fact is that Goldwater's feels its employees will be happier if they have the chance to fly. They believe it so thoroughly that they are willing to underwrite the cost. The employees pay $2 per hour, dual or solo. The store pays the rest.

The club started in the minds of Bob and Barry Goldwater early this year, soon after Barry, a pilot since 1930, returned from service with the Army Air Forces where he was a lieutenant colonel. Bob, the younger of the two Goldwaters, stayed home and ran the department store while Barry was away at war. But he, too,

**Jo Ann Snell** revs up Aeronca, ready to taxi under direction of Bob Goldwater. Watching is Anna Sue Amann, another club member.



**Jo Ann's regular job** in Goldwater store is selling young women's dresses. She does her flying before 10 a.m., after hours in the evening, and on week-ends.

**Arriving at airport,** Jo Ann and Anna Sue are helped out of motorcycle sidecar by Ernie Brewer, president of flying club, who is assistant shoe buyer at store.

**Planning picnic,** club members decide on spot approximately 45 miles from the field. Kneeling, left to right, are Bob Goldwater, Anna Sue, Jo Ann, Dorothy Niel and Ernie Brewer. Standing are club members Bill Saufley and Gene Warren.

had been infected with the flying bug and got his private license in 1941. He became an ardent pilot in the Arizona wing of the CAP.

Both Bob and Barry have long believed in the dollars and cents value of good employee relations. This belief has resulted in some startling innovations. There is a "Victory Farm" on the outskirts of Phoenix, where employees go on week-ends and vacations to hoe and dig in the rich earth of the Salt River Valley. On the Victory Farm, Goldwater employees enjoy a clubhouse, swimming pool, picnic grounds and barbecue pit. There are Shetland ponies for the children and a day nursery during the summer where the moppets of working mothers receive expert care and training.

In the mountains, north of Phoenix, Goldwater's maintains a cabin in the pines where employees and their

**Jo Ann fastens** safety belt. Her passenger must be licensed pilot because she has only student permit.

**Contact!** Ernie Brewer prepares to spin prop with Jo Ann at the controls. It will take plane only a half hour to fly the 45 miles to picnic site.

**Hot dogs** roasted over desert fire taste mighty good after a day in the store. The flying club that makes picnic possible has 18 members. After earning private licenses they must leave the club but can fly Waco or Stearman at minimum cost.

families may vacation without expense, except for food.

It is no wonder that employees of Goldwater's are fiercely loyal to the store in view of the fact that the Flying "G" was organized strictly for the benefit of employee members.

Ernie Brewer, assistant shoe buyer in Goldwater's, has been a private pilot for some time. The idea of a store flying club was developing in his mind about the same time it was born to Bob and Barry Goldwater. Brewer was charged with the job of starting the club. What's more important, he was given real assistance with the dual problem of every flying club—organization and budgeting.

"We'll buy a plane for you," Brewer was told. "We'll also hire an instructor. The only expense to members will be the hourly cost of keeping the (*Continued on page* 128)

# Planning Your Flight

*Going to fly cross-country? Follow this step-by-step procedure outlined by an air navigation authority.*

By
JOHN R. HOYT

**Cross-country pilot** first plots out his course directly on the aeronautical chart, and then uses the Airman's Guide to check all airports along route.

HAVE you ever been lost? Think back truthfully over your various cross-country flights. Think back even further, to that time when you were stunting within five miles of the airport where you soloed.

The answer in most cases is "yes." Everyone has been lost at one time or another and that is probably why so many inquiries have been received asking, "How does one fly cross-country?" Readers want to know why text books describe complicated, time-taking drawings of wind-triangles, when hardly any pilots use them. Isn't there a better, more simple method—one everyone can use?

Again, the answer is "Yes." In FLYING for November, 1945, a method of using a map for cross-country flights was described by which a pilot could fly cross-country using only a Sectional Aeronautical Chart. This kind of flying is possible but it entails constant vigilance and attention to detail, more work than fun.

But cross-country flying *is fun!* There is a way to fly cross-country that is easier, more efficient, and attainable with only a slight amount of study. It does *not* involve intricate drawings, triangles, or arithmetic problems.

In this second article on cross-country flight, we will try to explain such a simple but efficient method, one that has been used in every part of the United States.

Let's plan an imaginary trip for a week-end vacation. On such a flight we can easily fly 500 miles round-trip and still have plenty of time left for fun. In the present-day lightplane the trip is usually only a matter of five or six hours.

However, we must plan correctly. In general, there are several kinds of information, many of which may be found on the map, the others being from other sources. A brief review of the map, as described in the preceding article, will cover the preliminaries and get you set to use it in the most practical fashion.

First, get a Sectional Aeronautical Chart covering your flight. (See page 32, Index of Aeronautical Charts, in November FLYING.) Despite the advent of newer maps like the World Charts, the old, reliable Sectional is still the favorite. A pilot must have detail when he flies a lightplane since he travels slower and gets lost more quickly and finds himself less easily.

Find the following aids on your map: water (rivers, lakes, streams); land (mountains, valleys, deserts); man-made features (towns, cities, roads, railroads) and data

## AERONAUTICAL SYMBOLS

(Bearings are Magnetic at the Station)

Radio range "N" quadrants are identified by line on side of legs

Radio fan marker

Radio beacon, non-directional

Radio range facility

Facilities available at airfield. Box indicates radio facilities available as shown.

Radio broadcasting station, frequency

Marine radiobeacon

Radio direction finder station

Radio communication station

Landplane base with complete facilities, is run by the military.

Landplane base with complete facilities, run by the civilians.

Landplane base with limited refueling and repair facilities.

Landplane airport, civil, refueling and limited repairing.

Flight strip with limited or no facilities.

Landing field, limited or no facilities or information not available.

Seaplane base, military, with complete facilities.

Seaplane base, civilian, with complete facilities.

Seaplane base, joint military and civilian complete facilities.

Seaplane base, military, fuel and limited repairing.

Seaplane airport, civil, fuel and limited repairing.

Seaplane base, military and civilian, fuel and limited repairs.

Seaplane emergency anchorage, limited or no facilities or no information available.

**Length of Longest Runway Indicated by Circle**

2500-3499

Over 6500

5500-6500

4500-5499

3500-4499

Length unknown

**Lighting Facilities**

Rotating beacon

Obstruction light

Rotating beacon with course lights

Nightlighting facilities LF

Rotating beacon with code beacon

Navigational lights

Flashing beacon

Lightship

Aviation beacon flashing code

for the pilot (airports, radio beams, airways, beacons).

Second, lay out your course, draw it in, and measure it. Plan to fly over safe terrain and avoid bad stretches.

Now to get down to brass tacks and make use of the many aids for pilots furnished by the Department of Commerce, and indicated for you on the map. Under five general headings, you will find:

1. Airports
2. Radio Aids
3. Civil Airways
4. Beacons
5. Miscellaneous

*Airports:* After laying out the course, take a look at the airports enroute, and the one you are going to land on. As indicated in the adjoining chart, the airport symbol tells much about the field, whether it's Army, Navy, commercial, intermediate or auxiliary. What is more, this year's charts indicate the length of the longest runway; the "pie" or shaded portion of the circle tells the approximate length. Later another symbol will become prevalent: a "slit circle" for a landing strip.

Are you going to land after dark? If so, you want to know if there are lighting facilities shown by the symbol "LF," and what the altitude of the field is, shown by numerals beside the airport.

*Radio Aids:* Sooner or later, you'll have a radio receiver in your plane. Even if it is battery operated and cannot be run continually you'll want it for radio beams, tower contacts, and even to listen to your favorite ball game on a Saturday flight. So check your radio aids: first, the towers (usually on 278 kc); then the radio ranges with frequency, call letters, and Morse code signals in a little box near the range. The range, as you can plainly see, is four red wedges, the center of which is the station, or transmitter. The northernmost quadrant sends out an "N," or "—·". This da-dit resolves into a steady buzz when the opposite signal, an "A," or "·—" overlaps. This steady tone forms the red wedge noted on the map.

Even if you're not an instrument pilot and have no intention of becoming one, you can use these beams to help you hold your course and position on airways. You should learn Morse code, not at race-horse speed but at two or four words per minute, to enable you to recognize radio range signals quickly. Then you merely look at the map, read the frequency, tune in the beam, check the call letters, see if you are getting an "A," "N," or on course. The correct heading to follow is printed on the beam and is *magnetic*, not true.

Now find a large city and locate a broadcast station. It is in a red-lined octagon, with call letters and frequency. If your plane has a loop antenna, you can fly toward this station by tuning it in properly.

*Civil Airways:* The symbol for civil airways is also shown on this page. Whenever you can, plan your flight along them because they are safer, along reasonably safe country, and have aids to navigation such as beacons, auxiliary fields, and radio ranges. Suppose you are flying from Tucson to El Paso, you would be smart to take the airway instead of a direct route. The airway goes around a mountain, the direct route right over it. And the time saved during the hazardous flight is negligible.

*Beacons:* The lighting facilities are also on your map. You may never need them but when you do they are invaluable. Suppose we encounter a strong headwind on this trip, fail to land before dark, and have to find a field. It's best to get on a lighted airway and fly the beacons.

A rotating beacon (star with white center) revolves once every 10 seconds. You will see it as a flash of light, if it has course lights, the flash will be followed by a green flash (near a lighted field), yellow flash (near an unlighted field), or a red flash (no (*Continued on page* 132)

**Pilot R. P. Walker** checks oyster beds by plane, reports by radio.

# Oyster Patrol

*Willapa Bay oystermen saved themselves time and money when they hired an aerial patrolman.*

**On patrol duty.** Walker flies a Globe Swift over the 295 square miles of Grays Harbor and Willapa Bay each day. Check on property lines and poaching activity, which once took a three-man boat crew two days, now is completed in an hour.

By DON R. HAMMITT

THE patrol pilot dropped down to 300 feet and flashed across the decks of the oyster dredge working the Willapa Bay beds of southwestern Washington state. Two of the oystermen looked up briefly and waved; their companions continued at work, ignoring the plane.

They are uninterrupted because the appearance of the plane is a daily occurrence—something to expect and accept in the routine of a day's work. The oystermen know that their dredge has been identified and the location of their day's operations has been checked on oyster-bed charts carried by the pilot of the Willapa Bay-Grays Harbor aerial oyster patrol.

Aerial patrolling of oyster beds to prevent piracy of crops and accidental miscalculation of property lines by firms with neighboring beds is an innovation which Southwestern Washington oystermen believe the Atlantic seaboard oyster industry will adopt in the future. Willapa Bay and Grays Harbor were patrolled by boat until last May when the patrol boat exploded and burned in an accident that nearly cost the lives of the crew.

After this accident the patrol became airborne and oystermen found that the 295 square miles of Willapa Bay and Grays Harbor not only could be covered more effectively in one hour of flight time than in two days of boat operation but that it cost considerably less to operate a plane one hour than to pay a (*Continued on page* 140)

# THE Aeronca Chief

FLYING's CHECK PILOT

**EDITOR'S NOTE**

*This series of articles is planned to help the pilot and prospective plane owner evaluate aircraft now on the market. Only aircraft holding a CAA Approved Type Certificate are flown. The author is not a professional test pilot. He evaluates each aircraft through the eyes of an average private pilot who flies an airplane either for business or sport.*

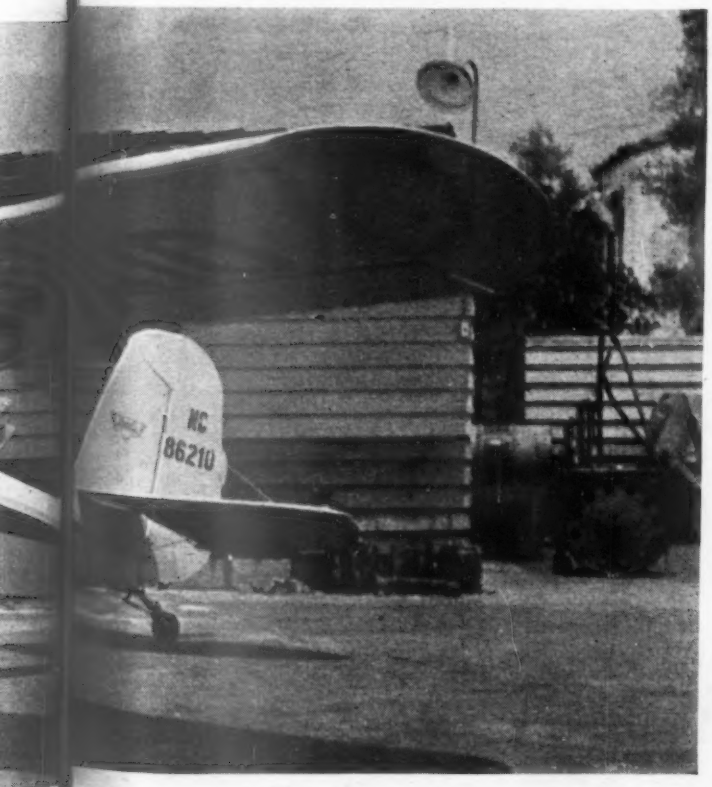
AN UNINFORMED aviation writer is sure to turn up every so often, with a learned treatise that refers to any small high-winged low-powered lightplane as "a *Cub*-type airplane." This sort of aeronautical dim-wittery causes the lightplane manufacturers periodic nervous pangs. Not that the Piper *Cub* doesn't deserve being a household term. The fact remains that there *are* other lightplane manufacturers in the world, and they are producing some excellent—and popular—airplanes in their own right.

Unfortunately, the name Aeronca has not joined "*Cub*" and "coke" in our everyday vocabulary. Nonetheless, it is a matter of historical record that Aeronca (the name comes from the company's original name: Aeronautical Corporation of America) dates back earlier than the original *Cub*. It also is a matter of record that Aeronca today is producing two excellent models—and, according to Aeronca officials, producing them in larger daily numbers than any other manufacturer.

One of these models is the *Chief*, with (*Continued on page* 120)

**Chief and Champion** (background) have same engine and performance. Many parts are interchangeable. Note the Champion's visibility.

**Chief's cabin** is one of the most attractive among lightplanes. Handle to left of pilot operates the mechanical starter.

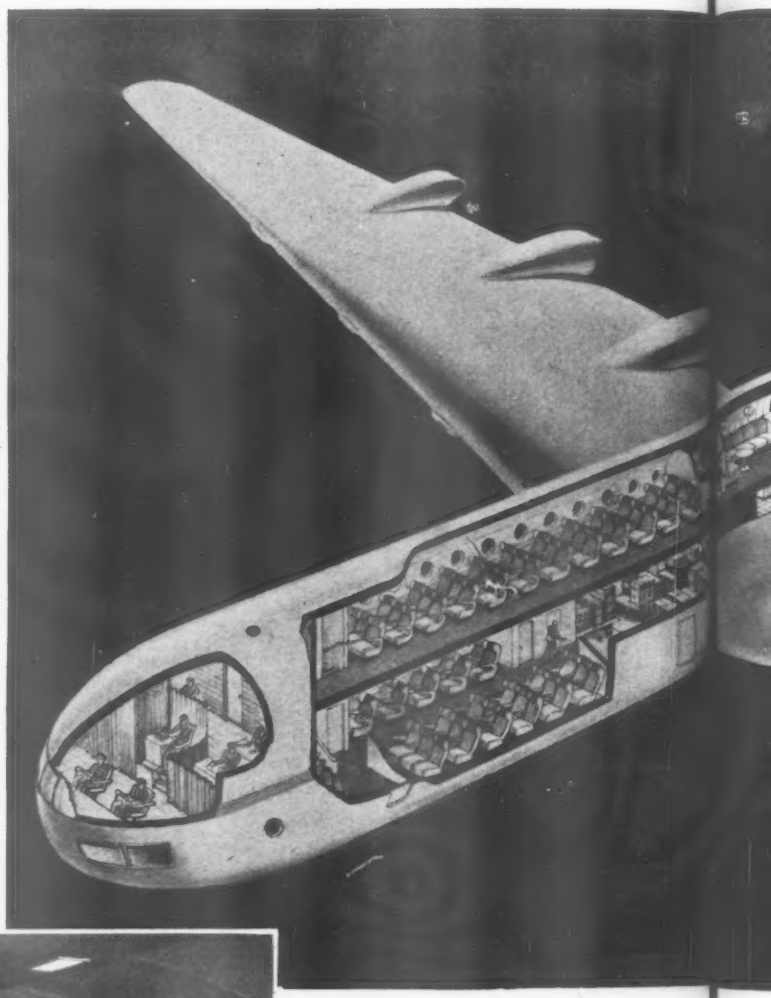



**Side-by-side Chief** has top speed of 100 m.p.h. and cruises at 90 for its maximum range of 420 miles. The Chief lands at 40 and has a 500-f.p.m. rate of climb.

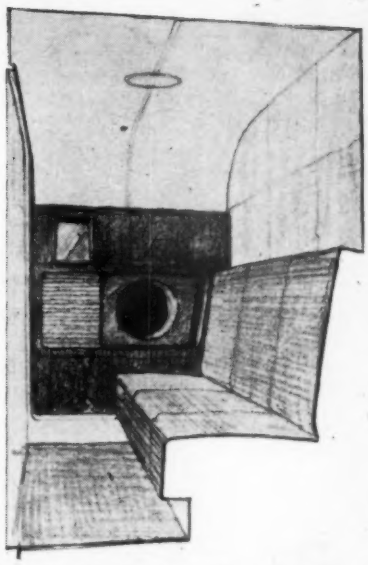
# How to Dress an Airliner

*Top-notch designer tackles his toughest job—fitting human bodies into a plane.*

**Henry Dreyfuss** directed interior design of huge Convair 37. The polaroid window he holds regulates amount of light admitted.



**Two hundred passengers** had to be fitted into giant plane with a minimum of waste space and maximum of comfort. Seats are hard compared with parlor sofa but tests show them to be comfortable for long hours of transoceanic flights. Dreyfuss had to combat passenger noise as well as engine noise in sound-proofing the fuselage's interior.



**Sketch** of bedroom shows seating that makes up into double berth.

**Lounge** of plane's full-scale mock-up has eye appeal and comfort.

## By J. DAVIS SCOTT

DESIGNING of airplane interiors, from the tiny one-seater to a huge world airliner capable of carrying more than 200 passengers, is an undertaking fraught with the complexities of colors, fabrics, lighting, posture, weight, insulation and aerodynamics.

Henry Dreyfuss of New York City and Pasadena, Calif., is a famed industrial designer from whose busy workshop have come plans for fly swatters, radios, handset telephones, ocean liners, trains, buses, vacuum cleaners, typewriters and farm equipment. He has lately turned his attention to probably the most complex interior plane design ever attempted—the Convair 37.

"The human body" says Dreyfuss, "is called upon to do many onerous things in our modern world, but fitting itself inside the fuselage of an airplane is one of its most difficult assignments. The fuselage of an airplane is round and people just don't fit naturally into rounded places.

The Convair 37 is a new double-deck aircraft, 182 feet long with a wing span of 230 feet. It will carry more passengers than any other plane in the world. Its wing span, more than twice that of the *Liberator*, is equal to the height of a 21-story building; it weighs 320,000 pounds and is 12 times the size of a DC-3; its electrical system is equivalent to that used by a town of 5,000 people and its heating facilities would be sufficient to heat a 40-room apartment building.

Dreyfuss' first job was to consult with the engineers who had designed the exterior of the plane. In these sessions he learned how many people the plane would

carry, how much space and weight had been allotted for passengers, what areas of the world the plane would operate in, what the climatic conditions were, how many hours it would operate at one stretch, how much money had been budgeted for the interior and countless other minute details.

With these basic questions answered and a creed of "no waste space, no extra weight and no excessive decoration" before him, he and his staff, together with several consulting aerodynamic engineers, set to work on the project.

Not only did Dreyfuss have to figure out how to fit 204 people into the flying machine, but he also had to design the most luxurious staterooms, lounges, berths and galleys possible.

In most planes the noise created by the engines is usually one of the major problems. The Model 37 will have six huge pusher-type engines, capable of producing as much power as 353 average automobile engines. Their roar has been virtually eliminated by careful soundproofing.

But while the engine noise was thus solved the chatter from the more than 200 passengers was not. Tests showed that these people would, in natural conversation, set up quite some din. So the initial task was to insulate the luxury liner like an office building against the noise of the people it carries. This was done by incorporating a new spun glass material, which would absorb noise, behind the paper-thin mahogany paneling and fabric-upholstered walls of the plane.

The initial step in the business of creating a suitable interior was to build a life-size mock-up. In New York's Manhattan sector a loft building was located. By combining its second and third floors enough space was provided to build in mock-up a center section of the plane's interior.

The entire interior was initially built after sketching small, exact scale, toy-like cardboard models. Some showed the interior in its entirety, others emphasized various features like the lounges, staterooms, a stairway from the first to the second deck. This work took weeks. Drawing boards and tables were continually jammed with drawings, sketches and the cardboard models. Time and again the sketches were redone, the miniature models changed.

One of the most difficult of the first tasks was designing a chair which would induce relaxation and reduce fatigue. For people who would spend as long as 12 hours in the plane, this feature would be of utmost importance.

"Our approach to the problem was scientific," explains Dreyfuss. "We retained an eminent doctor who had spent a lifetime working on posture corrections. He submitted ideas. We built various chairs. Once we had some 50 people sit in these chairs for 24 hours to test their reactions. Finally we decided on a design that isn't deeply upholstered. You don't sink into it when you sit down. This chair features a very lightweight fabric covering and eliminates rubber, springs and upholstery. The person who sits in it for the first time will probably find it hard. It is hard, at first—but it's the kind of a chair that will do what we want it to do most—induce relaxation and reduce fatigue."

Selection of materials for the interior was another difficult assignment. It took more than eight months to plan, sketch, model, assemble materials and finally to build the life-size mock-up. A trip through the mock-up is like a walk into the future. Two decks high, with winding stairways at each end, it is a graphic presentation of the interior which will, when built, include nine staterooms and 84 seats (which can be turned into berths) on the lower deck, and 120 seats on the second deck, in addition to comfortable lounges, spacious galleys and 18 toilets.

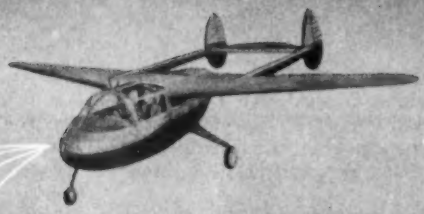
One of the first things you notice is the feeling of greater spaciousness. This is only an optical illusion. By the skillful use of various colors Dreyfuss has made the small spaces seem larger and the ceilings to appear farther away than they actually are.

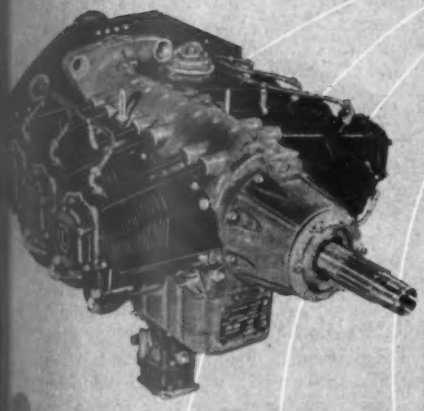
The psychology of the use of color is also well applied here. Colors and combinations are used which soothe the average human, while colors which would irritate, nauseate or excite him are eliminated. There are no pastels. There is no yellow—because many people surrounded by yellow have a tendency to illness. Rusts, browns, greens and sand colors prevail, with some lighter colors being used for contrasts.

If you've vainly tried to keep out the terrific glare above clouds and oceans with the little window curtains on modern airliners, you'll appreciate the new windows in this giant plane. They're polaroid. They weigh much less than the pre-war models and by the mere flick of a wrist a passenger can adjust the light to any degree he desires.

Saving weight obviously assumes enormous importance. The war has accelerated the development of many lightweight, durable materials—plastics particularly. Liberal use of these new materials has been made. A fine-looking plastic material covers the walls. It is woven porous enough to absorb sound and it is also washable. Plastic lenses are used in the lighting fixtures to help maintenance and to concentrate candlepower at the reading level. A specially-backed carpet, weighing as little as two ounces per square foot, covers the flooring. Curtains used on the berths are infinitesimal in weight, opaque, and will not crush. In the washrooms, more beautiful than any you have ever seen aloft, (*Continued on page* 152)

**Seats fold into beds** as in Pullman cars. Dreyfuss designed metal suitcase in experiment to standardize luggage sizes.

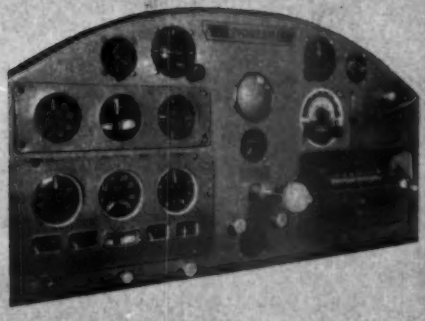




# *Personal* FLYING *Review*

OF

## THE NATIONAL AIRCRAFT SHOW



**The prospective plane owner and private pilot can see what the aviation industry has to offer him at Cleveland, from November 15 to 24 inclusive. The following pages are a summary of personal aircraft, engines, instruments, radios, and propellers, most of which will be at the show. This extra section has been added to the regular December issue as a bonus to FLYING's readers. The Cleveland event is the aviation industry's first official annual show. The second will be held in 1947 in Los Angeles.**

## Aeronca Champion

One of the best of the "airport workhorses," the Champion is a tandem trainer with unusually good all-around visibility. Powered with a 65-h.p. Continental engine, it cruises between 85 and 90 m.p.h.; stalling speed is 40 m.p.h. Range at its gross weight of 1,220 pounds is 250 miles; fuel capacity is 13 gallons. With a 470-pound payload, the Champion has a service ceiling of 12,600 feet. Best rate of climb is 500 f.p.m. Wing span is 35 ft. 2 in., length is 21 ft. 6 in. Wing loading is 7.17 lbs./sq. ft. Price is $2,395 at Middletown, O.

## Aeronca Chief

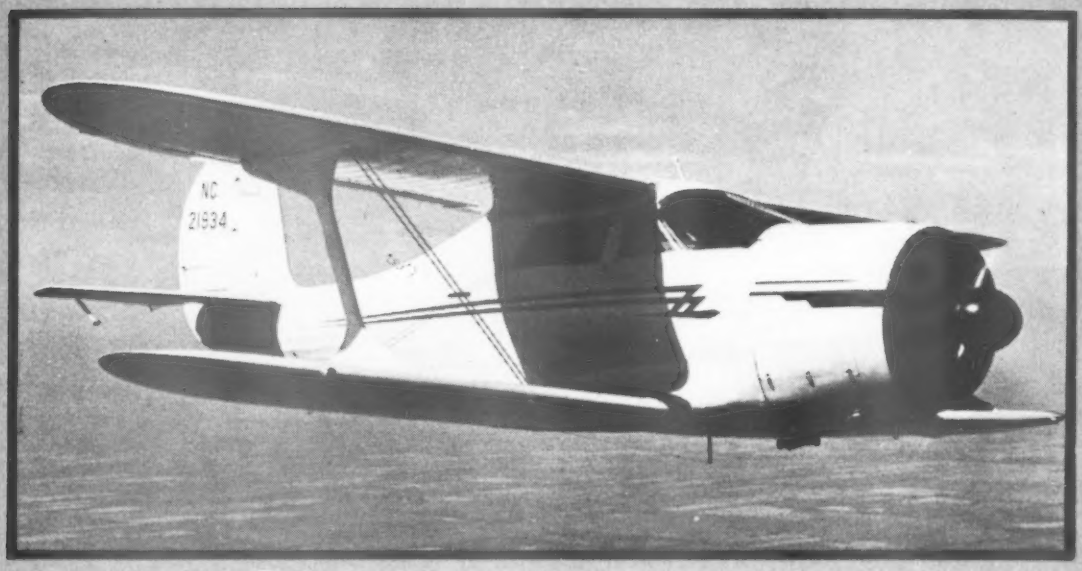
A veteran among cross-country lightplanes, the Chief is on the market again in 1946 dress. It has a 65-h.p. engine, cruises between 85 and 90 m.p.h. and might well be called a side-by-side deluxe version of the Champion. Its performance is almost identical with that of the trainer. It carries 23 gallons of fuel, can fly 420 miles non-stop, lands at 40 m.p.h. Gross weight is 1,250 pounds, wing loading 7.15 lbs./sq. ft. Service ceiling is 10,800 feet. The price f.a.f. Vandalia, O., is $2,585. Also see the article on the Chief elsewhere in this issue.

## Aeronca Chum

This is Aeronca's bid for the post-war personal plane market. The Chum is being manufactured under a patent license from the Engineering and Research Corporation, manufacturers of the Ercoupe. The Chum does not yet have its Approved Type Certificate. It is powered with an 85-h.p. engine, will cruise at 105 m. p.h. for a range of 400 miles; stalling speed is 49 m.p.h. Payload is 540 pounds, gross weight, 1,400 pounds. The Chum is two-control, has a single fin and rudder. Span is 28 ft. 8 in. Aeronca will produce the Chum in a new Indiana factory.

## All American Ensign

This good-looking newcomer still is awaiting its Approved Type Certificate, although it was first flown in October, 1945. Two-place and powered with an 85-h.p. engine, the Ensign is reported to have a cruising speed of 110 m.p.h. and a stalling speed of 50 m.p.h. Gross weight is 1,450 pounds, range with two people is 400 miles. Service ceiling is 14,000 feet, best rate of climb, 700 f.p.m. Wing span is 33 feet, length 22 feet. According to the manufacturer, the Ensign will sell for $3,495 when it goes into production after being certificated.




## Beechcraft Model 17

The biplane with the negative-stagger wings is quickly recognized everywhere in the world. It is back in limited production, selling for $29,000. A five-place airplane, the Model 17 has a 450-h.p. engine and a cruising speed of 201 m.p.h. at 10,000 feet (75 per cent power). This is at a gross weight of 4,450 pounds. Maximum range with 170 gallons of fuel is 1,000 miles; service ceiling is 20,000 feet. Stalling speed is 55 m.p.h. Wing span is 32 feet, wing loading 14.34 lbs./sq. ft. It will climb 1,250 f.p.m. at sea level. Payload is 1,650 pounds.

## Beechcraft Model 18

This popular twin-engined light transport is in production for civilian use again. It was built in large quantities for the armed forces during the war. It has two 450-h.p. engines, carries as many as seven passengers, and two pilots. Cruising speed is 211 m.p.h. at 10,000 feet, service ceiling 21,200 feet. Fully loaded, the Model 18 weighs 8,500 pounds, 2,885 pounds of that being payload. Wing span is 47 ft. 7 in., length, 33 ft. 11½ in. Initial rate of climb is 1,250 f.p.m. Price of the standard Model 18 is $60,440. This airplane is popular with business organizations.

## Beechcraft Bonanza

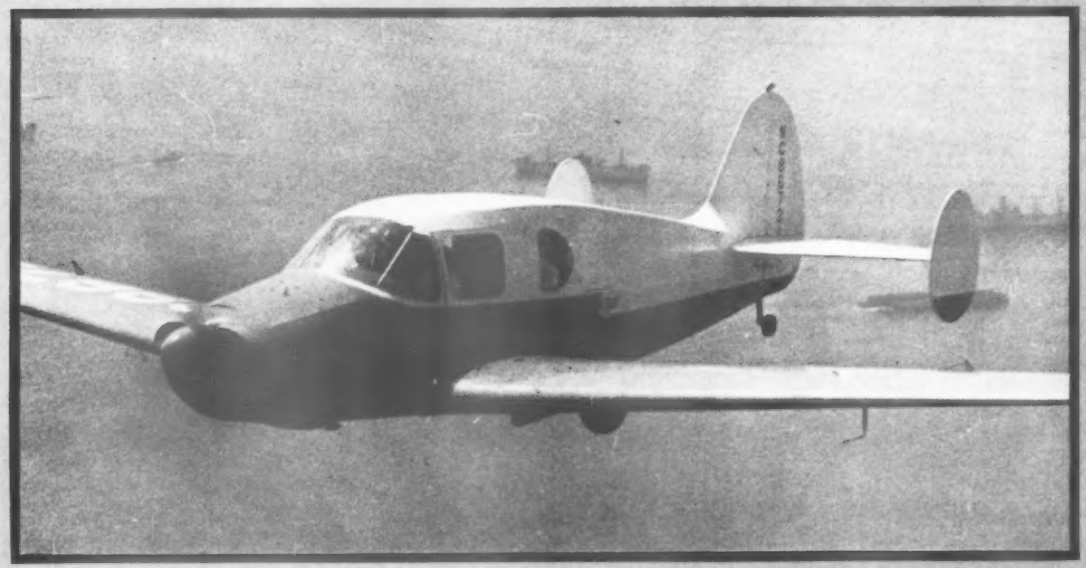
If the Bonanza delivers its announced performance, once it gets its A.T.C., it will be one of the most efficient, high-performance small airplanes ever produced in this country. This four-place tricycle-geared monoplane is reported to get a cruising speed of 175 m.p.h. at 10,000 feet from its 165-hp. engine, at a gross weight of 2,550 pounds. Its maximum range is 750 miles on 40 gallons of fuel. Service ceiling is 18,000 feet, sea level rate of climb is 950 f.p.m. Its stalling speed is 46 m.p.h. The Bonanza is scheduled to sell for $7,345.

## Bell Model 42

There is this two-place helicopter in the Bell catalogue. With its 175-h.p. engine it will carry two people, baggage, fuel and oil for a range of 200 miles at a cruising speed of 80 m.p.h. Gross weight is 2,100 pounds. Service ceiling is 9,700 feet. Like the larger Model 47, the Model 42 has a cabin laid out very much like the body of an auto, with split windshield and auto-type doors. Diameter of the main two-bladed rotor is 33¾ feet, and its disc loading is 2.35 lbs./sq. ft. Bell is placing its main sales effort on industrial use, not sport.

## Bell Model 47

This is the closest thing to being a "family" helicopter. It will carry five people, plus baggage and, of course, can be converted for other uses, ranging from crop dusting to air-sea rescue work. The Model 47 is powered with a 450-h.p. engine, has a top speed of 125 m.p.h., cruises at 100 m.p.h. and has a service ceiling of 13,000 feet. At its normal gross weight of 5,100 pounds, this helicopter has a range of 300 miles. Diameter of the main two-bladed rotor is 47½ feet; disc loading is 2.87 lbs./sq. ft. No commercial price has been set.

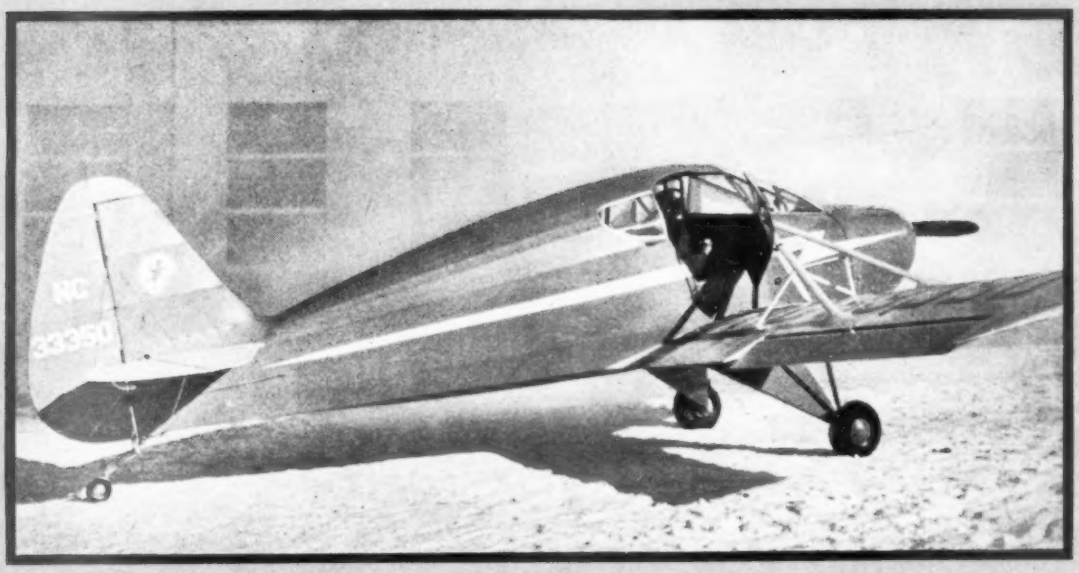


## Bellanca Cruisair Senior

One of the most efficient private planes flying, the post-war Cruisair now is in substantial production at New Castle, Del. This airplane gets a cruising speed of 153 m.p.h. from its 150-h.p. engine, according to the manufacturer, and carries four people for a normal range of 600 miles at that speed. Gross weight is 2,100 pounds, payload is 900 pounds. With flaps, the stalling speed is between 40 and 45 m.p.h. Sea level rate of climb is 1,130 f.p.m., service ceiling 17,000 feet. A detailed article on this airplane appeared in FLYING's November issue

## Bendix Helicopter

Little information was available on this helicopter at time of publication. The Model K, shown here, is a one-place forerunner of a four-place helicopter that Bendix plans to place on the personal-helicopter market in the future. The Model K, meanwhile, has been flown extensively. It is powered with a 100-h.p. engine. The two rotors are co-axial and have a radius of 12 ft. 6 in. Unlike most helicopters, this design does not have a smaller tail rotor. The Model K flew for the first time on June 30, 1945. The four-place model now is being built.



## Call Callair

A two-place private plane designed primarily for use on high-altitude fields, the Callair currently is in production at Afton, Wyo., under A.T.C. No. 758. Powered with a 125-h.p. engine, this airplane carries a gross weight of 1,550 pounds at a cruising speed of 102 m.p.h. and for a range of 332 miles. Stalling speed is 45 m.p.h., service ceiling 17,500 feet. Sea level rate of climb is 1,000 f.p.m. The Callair, first flown in 1940, has a wing span of 35 ft. 10 in.; wing loading is 8.5 lbs./sq. ft. The standard model sells for $4,200 f.a.f. factory.

## Cessna 120

Newest trainer on the market, the "120" is identical with the "140" with the exception of the latter's flap and deluxe interior. Because its performance is the same as that of the "140," it also is being widely used for cross-country flying. Dimensions, performance, and loadings are identical, although the empty weight of the "120" is 120 pounds lighter. Both airplanes are being manufactured under one Approved Type Certificate, No. 768. List price of the "120" is $2,695 at the factory in Wichita. The novel spring-steel landing gear is on both airplanes.

## Cessna 140

Rapidly becoming one of the more popular lightplanes, the "140" and its stripped-down counterpart, the "120", are in large-scale production. Both are powered with an 85-h.p. engine, giving them a cruising speed of about 110 m.p.h. and a range of nearly 500 miles. Gross weight is 1,450 pounds, stalling speed 41 m.p.h., service ceiling 15,500 feet. The "140" sells for $3,245 at Wichita. Wing span is 32 ft. 10 in. A larger four-place Cessna also is planned. It will be an all-metal version of the pre-war Airmaster, and currently is known only as the Cessna "170".

## Commonwealth Skyranger

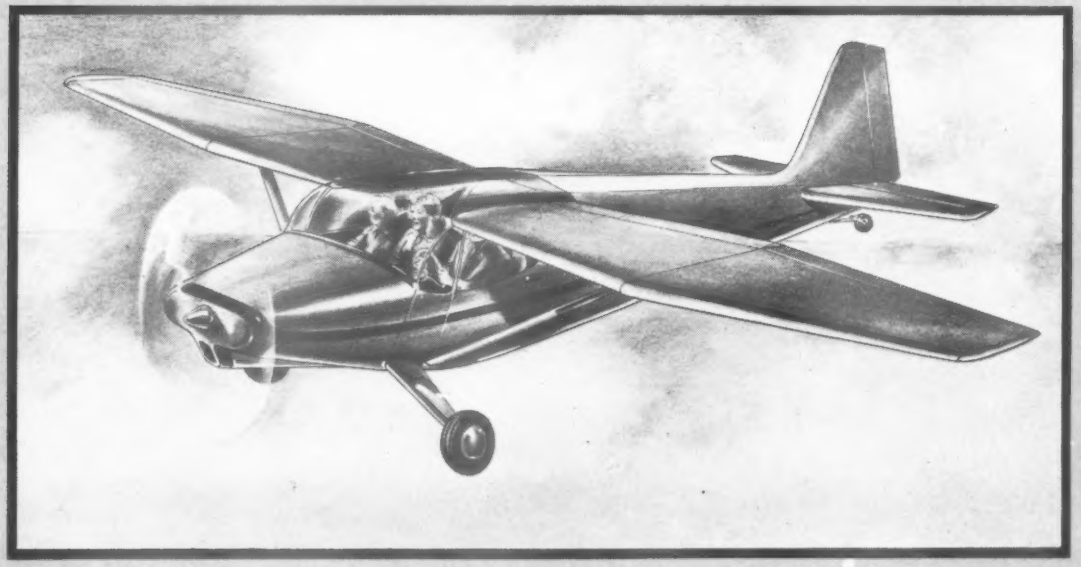
From a pre-war Rearwin model, Commonwealth has produced the Skyranger which has improved range, rate of climb, general performance and passenger comfort. The new model which sells at the factory for $3,195 offers side-by-side seating, dual controls, self starter and two-position propeller. Its 85-h.p. Continental engine gives it a range of 450 miles carrying a gross weight of 1,450 pounds. With a top speed of 114 m.p.h., the Skyranger cruises at 103 and stalls at 48, has 14,000-foot service ceiling and a rate of climb at sea level of 650 f.p.m.

## Commonwealth Trimmer

A twin-engined amphibian, the Commonwealth Trimmer offers the sportsman pilot or the executive 115-m.p.h. cruising speed, 450-mile range carrying a gross weight of 2,420 pounds, three seats that can be converted into two comfortable bunks, and a built-in galley. Powered by two 85-h.p. Continental engines, the Trimmer has a top speed of 134 m.p.h.; it stalls at 48, with flaps. It climbs at 850 f.p.m. at sea level, has a service ceiling of 14,000 feet and will maintain altitude on a single engine. When it gets its A.T.C., the price at the factory will be $5,985.

## Culver V

Designed for the amateur, the Simpli-Fly control of the Culver "V" is its most noteworthy innovation. With simple dial settings, control surfaces can be co-ordinated for what almost amounts to push-button flying. Its 85-h.p. Continental engine gives the "V" a 115 m.p.h. cruising speed, a top speed of 130. It has side-by-side seating and its 700-mile range is designed to attract the cross-country pilot. Service ceiling, with a gross weight of 1,600 pounds, is 13,100 feet. It has electrically-retracted, tricycle gear and a two-position propeller. Price is $3,950 at Wichita.



## Dansaire Coupe

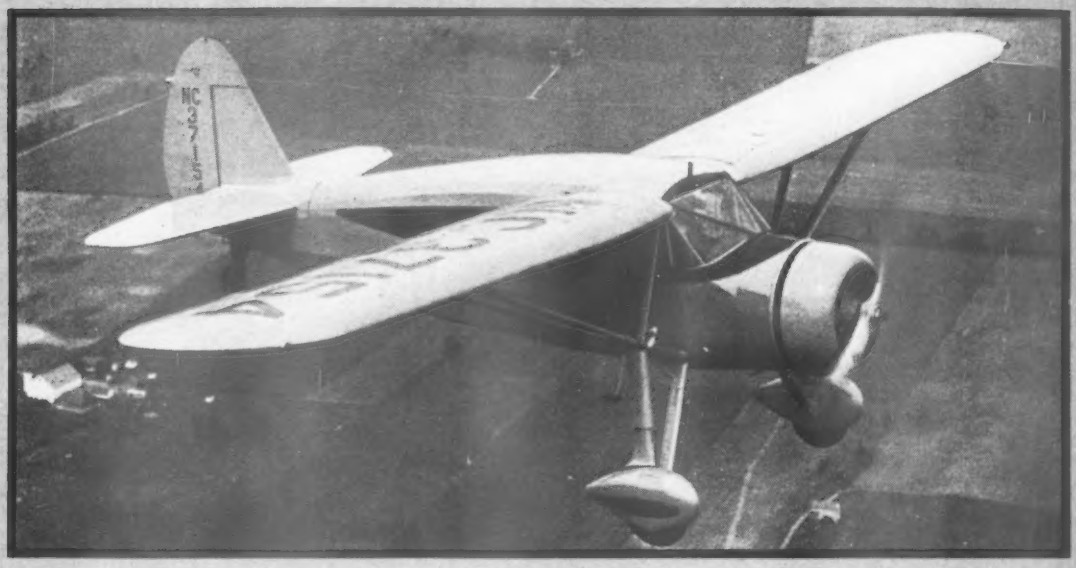
Everybody sits up front in the Dansaire Coupe, which is a three-place aircraft with a front seat five feet wide — five inches wider than the conventional automobile seat. The Coupe is aimed at "the average family," and has wide doors and a large baggage compartment. It is a strut-braced monoplane with an oddly shaped angular wing. Its 100-h.p. engine gives it a top speed of 115 m.p.h. and a cruising speed of 100 m.p.h. It lands at 48 m.p.h. and has a range of 500 miles. Not yet certificated, it is expected to sell in the $3,000 class.

## Erco Ercoupe

The post-war model of Engineering and Research Corporation's Ercoupe has a larger engine, a muffler, starter and a single foot brake. Basically it is the pre-war plane whose chief virtues are its simplified two-control system and its spin-proof characteristics. It ranges a maximum of 500 miles carrying a gross weight of 1,260 pounds. Top speed is 127 m.p.h.; it cruises at 110 and stalls at 48. The Ercoupe's rate of climb at sea level is 750 f.p.m. and its service ceiling is 14,000 feet. It has tricycle gear and a 75-h.p. Continental engine. It sells for $3,450.

## Eshelman Winglet

Simplicity is the design feature of Eshelman's low-wing monoplane, the Winglet. The two-place plane offers battery-generated starter, conventional controls and landing gear, the latter spaced rather widely. Power plant is a 100-h.p. Franklin; it gives the Winglet a 496-mile range carrying a gross weight of 1,510 pounds. With a top speed of 135 m.p.h., the plane cruises at 118 and stalls at 50. Its service ceiling is 15,000 feet and its sea-level rate of climb is 900 f.p.m. With its A.T.C. pending, list price of the Winglet is $2,995 f.a.f. Baltimore.

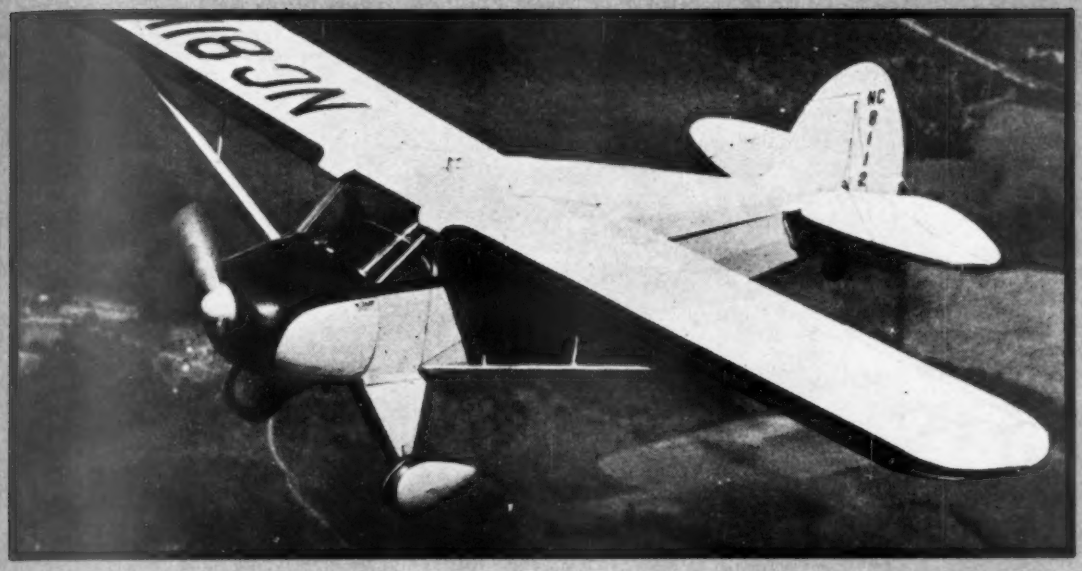


## Fairchild 24

Fairchild's F-24, a four-place family- or executive-type plane, offers choice of three different engine types — a 175-h.p. Ranger and two Warner radials, either 165- or a 185-h.p. Performance is not materially affected by selection. The F-24 has 639 miles range with a gross weight of 2,562 pounds. Top speed is 137 m.p.h. It cruises at 118 and stalls with flaps at 53. Rate of climb at sea level is 655 f.p.m. and service ceiling is 14,000 feet. With the Ranger engine, price f.a.f. is $8,875; with the Warner Scarab, $8,500, or Super Scarab, $8,850.

## Firestone Helicopter

The smallest helicopter yet offered in this country, this Firestone helicopter is built by G & A (Gyro and Aircraft), a Firestone subsidiary which grew out of the Cierva-Autogiro Corporation of America. The present 125-h.p. Lycoming engine is to be replaced by a 150-h.p. Lycoming. A two-place side-by-side machine with dual controls, the helicopter cruises at 80 m.p.h. and has flown at more than 100 m.p.h. It has a service ceiling over 10,000 feet and climbs in excess of 1,000 f.p.m. This Model 45-D is the commercial version of the new AAF XR-9B type.



## Funk F2B

Interior of the Funk "B" is patterned after the modern automobile. Soundproofing and mufflers make the two-place cabin exceptionally quiet. Its 85-h.p. Continental engine gives it a 350-mile range (with a half-hour reserve) carrying a gross weight of 1,350 pounds. The "B" has a low stalling speed of 37 m.p.h.; it cruises at 100 and its top speed is 112. Service ceiling is 15,000 feet and sea-level rate of climb is 800 f.p.m. It has dual wheel control and battery-generated starter. List price, including radio, landing lights and wheel pants, is $3,695 f.a.f.

## Globe Swift

Giving the 85-h.p. Swift a 125-h.p. Continental engine and making other important changes has added materially to the plane's speed and general performance, although it now carries slightly less pay load. Gross weight is upped to 1,710 pounds, but so is service ceiling — to 16,000 feet. Top speed is 153 m.p.h. and cruising 140. Stalling speed remains virtually the same as that of the Swift-85. Rate of climb at sea level has been increased to 1,000 f.p.m. With fuel capacity unchanged, the 125's range is reduced to 600 miles. The 125 sells for $4,395, f.a.f. Fort Worth.

## Grumman Widgeon

The Grumman Widgeon's all-metal construction, twin Ranger (200-h.p.) engines, complete instruments and ability to land almost anywhere makes it popular with feeder lines, charter service or the wealthy sportsman. Its range, at 4,525 pounds gross weight, is 450 miles. With flaps it stalls at 50 m.p.h. Top speed is 160 and it cruises, on 66½ per cent power, at 130. Its service ceiling is 15,000 feet and it climbs at 1,000 f.p.m. at sea level. Its five-place cabin provides freedom of movement and baggage accessibility to passengers. Price is $30,600.

## Hockaday Comet

The Hockaday Comet will be available with either the 125-h.p. Franklin or Continental engines as soon as it receives its A.T.C. From the firewall back, however, all Comet models will be the same. With either of the 125-h.p. engines named, the plane will range 500 miles carrying a gross weight of 1,800 pounds. Top speed is 140 m.p.h.; and the plane cruises at 125, stalls at 55. Service ceiling is 19,000 feet and rate of climb at sea level is 1,150 f.p.m. Price is $3,425 f.a.f. without propeller. Buyer may choose either wood or steel prop.

## Kaiser-Hammond Y2

The Kaiser-Hammond Aircar (Model Y2) is an enlarged and cleaned-up version of the pre-war Stearman-Hammond. Limited elevator travel on the "four- or five-place," pusher-type plane makes it spin-proof. Carrying a gross weight of 2,925 pounds, it ranges 600 miles. Its 220-h.p. Lycoming engine gives it a top speed of 150 m.p.h. It lands at 45, using flaps. Production models will offer either constant-speed or adjustable-pitch propellers. Other engine installations also may be offered. It has not yet received its A.T.C. and price is not fixed.

## Luscombe Silvaire Model 8A

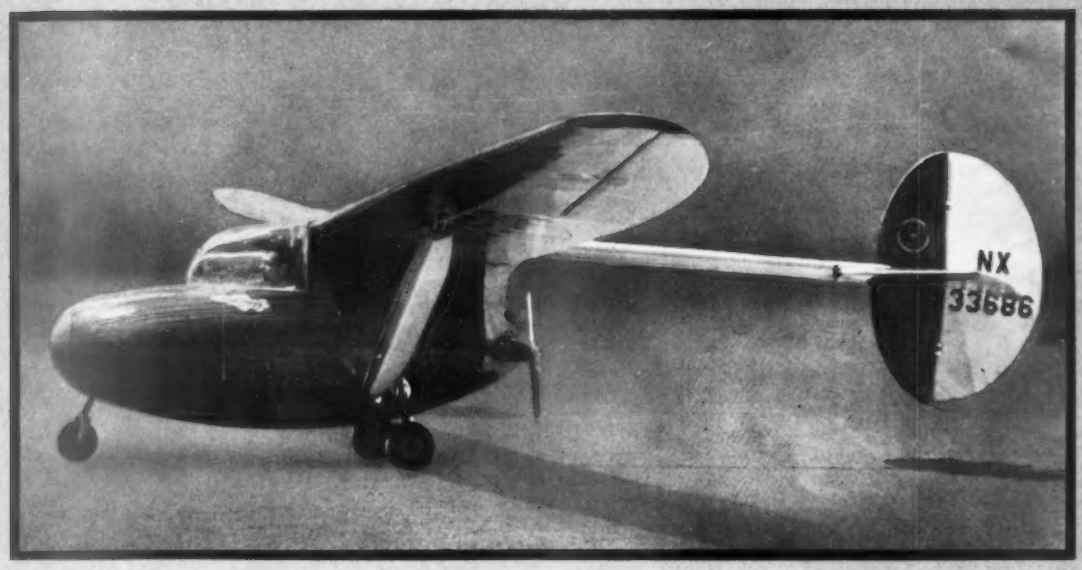
Now equipped with an all-metal wing in addition to its well-proven metal fuselage, Luscombe's smallest personal plane gives an excellent 105 m.p.h. cruising speed for its 65-h.p. Continental engine. The Silvaire 8A climbs at 900 feet per minute at sea level, and has a service ceiling of 15,000 feet. Maximum speed is 115 m.p.h. and range is 350 miles. In size, this Silvaire is almost identical with the other strut-braced high-wing monoplanes which make up this popular category—its wing span is 35 feet. Price is $2,995 f.a.f. at Dallas, Tex.

## Luscombe Silvaire Model 8E

Not yet on the market but already test-flown, the Silvaire Model 8E is basically the same airplane as the Silvaire 8A but has a Continental 85-h.p. engine instead of the latter's 65-h.p. engine. The 8E has better performance and, especially, greater range—650 miles as against 350. This makes it a much better cross-country airplane—a feature also helped by its 115-m.p.h. cruising speed. Stalling speed has risen considerably, from 37 m.p.h. on the 8A to 48 m.p.h. on the 8E. The plane is all-metal. No price has been announced as yet.

## Meyers MAC-125

A newcomer in the field of lightplane building, the Meyers Aircraft Company of Tecumseh, Mich., offers an all-metal two-place plane powered with a Continental 125-h.p. engine. The sleek little craft has excellent visibility and retractable gear which helps it to cruise at 120 m.p.h. Wing span is 30 feet, rate of climb 700 feet at sea level, and maximum speed 140 m.p.h. The MAC-125 first flew last February and was expecting its NC at press time. Range is 500 miles. Price has not definitely been established but it will be in "the $4,000 class."

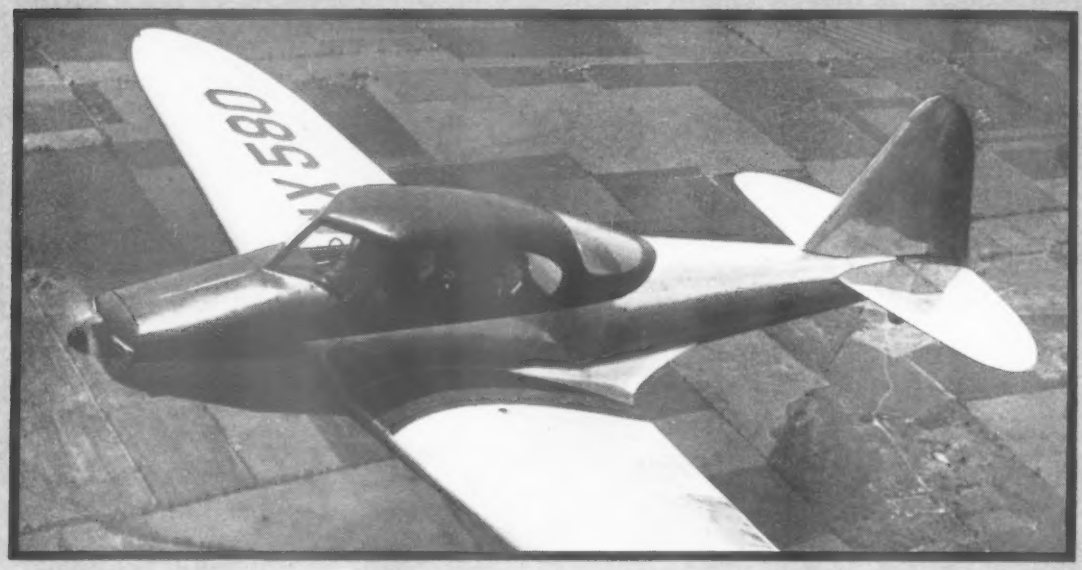



## Nelson Dragonfly

An entirely new class of aircraft has been created by this unconventional plane which completed its CAA tests in September. CAA recognizes the Dragonfly as "a glider with auxiliary power for take-off." The plane has a two-cycle four-cylinder magnesium engine of 25-h.p. at 3,900 r.p.m. The engine weighs less than 50 pounds and will permit more than an hour's intermittent cruising at 65 m.p.h. The craft has tricycle retracting gear, dual controls, and a gliding ratio of 18 to 1, made possible by its huge wing span of 47 ft. 4 in.

## North American Navion

Reminiscent of the Mustang in its squarish wing, rudder and elevator tips, the Navion is manufactured by the builder of that famous fighter plane. A four-place, all-metal craft, with cabin width of 43 inches, the Navion is fast (150 m.p.h. cruising speed), has a range of 700 miles, and can carry 680 pounds of passengers plus 80 pounds of baggage. The Navion is powered by Continental's 185-h.p. engine. It has a wing span (33 ft. 4-9/16 in.) less than a Cub. It lands at 54 m.p.h. with 40° flaps and is expected to sell for $6,100 f.a.f.

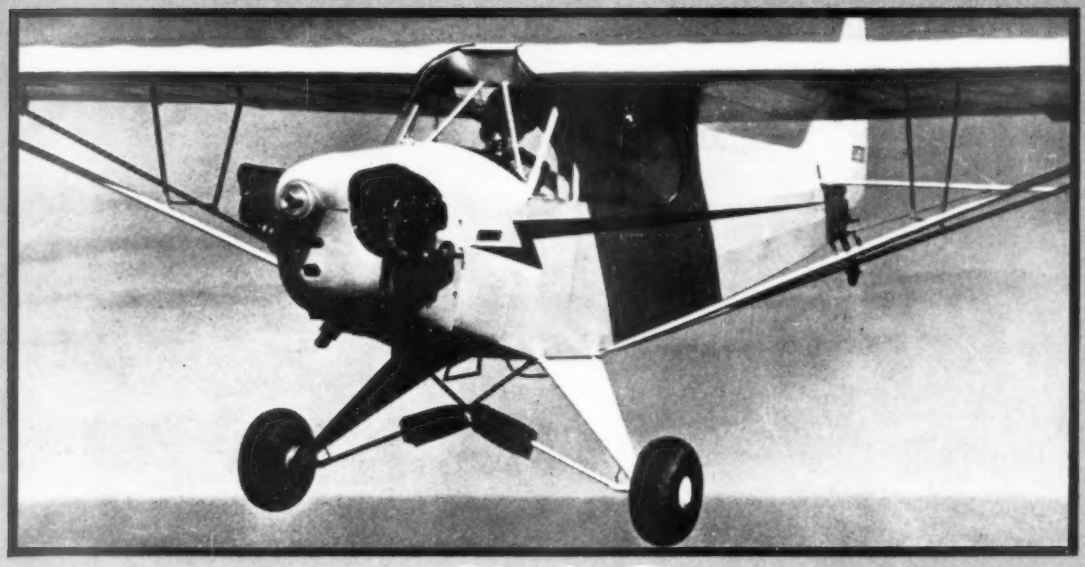


## Piper Skysedan

Slated for production in 1947, the Skysedan marks a definite departure in Piper design. It is a four-place all-metal plane with retractable gear, able to cruise at 140 m.p.h. with its Continental 165-h.p. engine. Wing span is 6½ inches less than the Cub trainer. Maximum speed is over 160 m.p.h., stalling speed 49 m.p.h. and range 620 miles. The Skysedan is designed as a family plane. It has an electric starter and generator. The gear retracts electrically. Baggage allowance is 25 pounds per passenger. Price is yet to be determined.

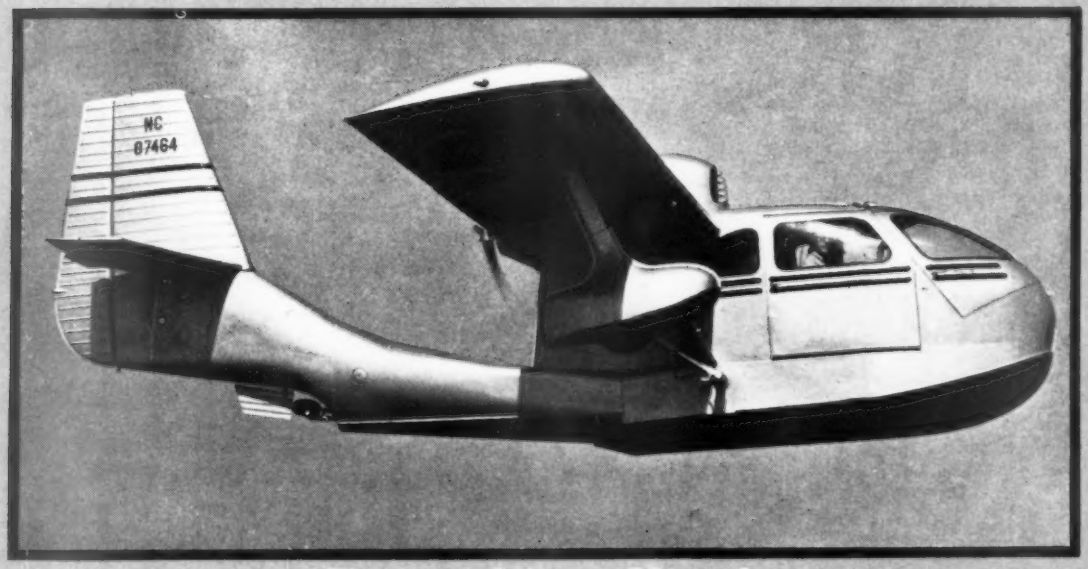
## Piper Super Cruiser

An improvement over the pre-war Cub Cruiser, the Super Cruiser is a three-place lightplane able to cruise at 105 m.p.h. for 600 miles. In appearance it is much like a big Cub trainer, though actually it has a wing span only three inches more. It has the same strut-braced high wing and fabric-covered wing and fuselage. The Super Cruiser is powered with a 100-h.p. Lycoming engine which gives it a maximum speed of 115 m.p.h. Sea level rate of climb is 600 f.p.m. Super Cruisers are rolling off the assembly lines in quantity and sell for $3,250.



## Piper Cub Trainer

The most widely-used trainer ever built, this Cub has probably taught more persons to fly than any other plane. It is, however, an "airport airplane," and its 200-mile cruising range is too short for practical cross-country work. Familiar on every airport, the trainer cruises at 73 m.p.h., stalls at 38 m.p.h., and has a sea level rate of climb of 450 feet per minute. Wing span is 35 ft. 2½ in., empty weight only 680 pounds. The trainer is powered with a Continental 65-h.p. engine which gives it a maximum speed of 83 m.p.h. Price is $2,195.




## Republic Seabee

True automobile-type mass production methods enter aviation for the first time in the Republic Seabee, an amphibian powered with a 215-h.p. Franklin engine. This four-place family airplane is heavier than conventional craft because its hull must be stressed for water landings. It weighs 3,150 pounds fully loaded, 2,100 pounds empty. Its gear is partially retractable. It cruises at 103 m.p.h., stalls at 58 m.p.h., has a range of 560 miles, has a maximum speed of 120 m.p.h. The standard model sells for $4,495; with reversible propeller, $4,995.

## Rocket 185

This is a fast sportsman's plane, reminiscent of the Bell Airacobra both in general appearance and in its retractable tricycle gear. It will accommodate three persons side by side in its wide cockpit, and carry them at a cruising speed of 185 m.p.h. at 6,500 feet, for a range of 925 miles. The Rocket is powered by a Lycoming 185-h.p. engine which drives an automatic propeller. The plane differs from most personal aircraft in having a stick rather than a wheel control. Wings are fabric-covered molded plastic plywood. List price is $5,000 f.a.f.

## Ross Model RS2L

Lowest-priced aircraft on the market today, the Ross sport plane lists at $500 less than the next lowest-cost model. It weighs only 555 pounds empty and its performance is surprisingly good for an externally braced parasol-type monoplane. Its 65-h.p. Lycoming engine gives it a maximum speed of 103 m.p.h., cruises it at 90 m.p.h. and permits a service ceiling of 14,000 feet. Range is only 230 miles, however. All plane and engine controls are installed in both cockpits of the plane, making it suitable for a trainer. List price is $1,495 f.a.f.

## Sikorsky S-51

Not for the average purse as yet, this four-place helicopter nevertheless presages important developments for the future. The S-51, which has Helicopter Type Certificate No. 2, is powered by a 450-h.p. P & W. Wasp Junior. It can carry a pilot and crew of three for 245 miles at a cruising speed of 85 m.p.h. Sea level rate of climb is 1,200 f.p.m. and service ceiling is 13,000 feet. Total length with blades extended is 57 ft. ½ in., disc diameter is 48 feet. This executive helicopter sells for $48,500 flyaway the factory at Bridgeport, Conn.

## Southern Southernaire

A twin-engined executive plane with a cruising speed of 166 m.p.h., the Southernaire is a plush model which is designed to take off and land on small airports. This is why it has high wings, can take off in 850 feet and land in 450 feet — although it has a gross weight of 5,100 pounds. The plane is powered with two 200-h.p. Ranger engines. Tricycle gear is retractable. Range at cruising speed is 760 miles. The plane is all-metal with semi-monocoque fuselage construction. Wing span is 42 feet. Selling price of the Southernaire has not been set.

## Spartan Executive

Another executive plane with airliner speeds and a carrying capacity of five persons is the low-winged all-metal Spartan Executive. With a wing span of 39 feet and powered with a 450-h.p. Wasp Junior engine, the Executive has a top speed of 220 m.p.h. It cruises at 203 m.p.h. and has a range, fully loaded, of 1,067 miles. This high-performance aircraft has a service ceiling of 24,080 feet and a sea level rate of climb of 1,340 feet per minute. A tricycle-geared improvement over the pre-war plane, the post-war Executive is not yet in full production.

## Stinson Voyager

Still another of the post-war crop of four-place "family" aircraft is the Stinson Voyager 150 — a fabric-covered high-winged strut-braced monoplane. The Voyager 150 is powered with a 150-h.p. Franklin engine which gives it a cruising speed of 125 m.p.h. and a maximum speed of 133 m.p.h. Great pains have been taken to sound-proof the plane. The engine is muffled and the cabin so carefully insulated with fiberglass that a dome speaker is perfectly audible and earphones are unnecessary. Wing span of the Voyager is 34 feet, range is 500 miles. Price is $5,495 at factory.

## Taylorcraft BC12-D

This Taylorcraft comes in three models, varying with finish and equipment. All versions are equipped with a 65-h.p. Continental engine and have similar performance. Wing span is 36 feet. Maximum speed is 117 m.p.h., cruising speed 100 m.p.h., stalling speed 38 m.p.h. Cruising range varies with the model from 300 miles for the Standard to 505 miles for the DeLuxe. The Custom model (radio, fairing, lights, battery) sells for $2,600 f.a.f.; the DeLuxe (radio, battery, light fixtures) for $2,500 and the Standard Model (not hand-rubbed) for $2,400.

## Taylorcraft Ace

Fundamentally the BC12-D model, but drastically stripped down into a basic airplane, the Ace has the same performance as the BC12-D but its cruising range is down to 270 miles. This side-by-side plane is the same as the T-craft Standard but has only one wing tank, no left-hand door, and no sliding panel in the right-hand door. Also eliminated are one control wheel, the spinner, cabin vents, assist steps, glove compartment, carpets, and all extras, though the basic instrument group remains. Price flyaway factory at Alliance, O., is $1,995.

## Taylorcraft Tourist

Designed to carry four persons and powered by a 150-h.p. Franklin engine, the Tourist is a "family" or executive plane with a cruising speed of 112 m.p.h. and maximum of 125 m.p.h. It has a range of 450 miles and stalls at 45 m.p.h. The plane has an electric starter, cabin heater, partial span slotted flaps, and roll-down front windows. The rear passenger compartment is instantly convertible into a large open cargo space, equipped with "T" lugs and stressed for freight. Wing span is 36 ft. 6 in., only six inches more than the BC12-D Model.

## Waco Aristocraft

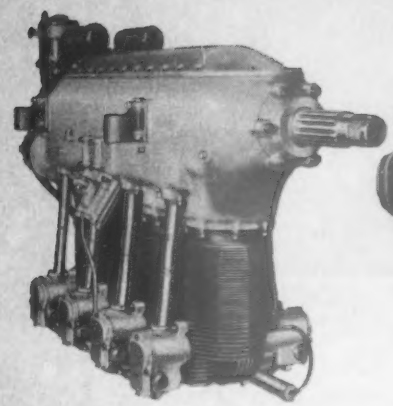
The most unusually-designed post-war airplane is the Aristocraft, a four-place pusher plane with a strut-braced high wing and retractable tricycle gear. This Waco is non-spinnable. There are no rudder pedals and all flight maneuvers are accomplished with a single co-ordinated control wheel. The 215-h.p. Franklin engine gives the plane a maximum cruising range of 657 miles. Sea level cruising speed is 135 m.p.h. and top sea level speed 154 m.p.h. The Aristocraft stalls at 55 m.p.h. The remotely-driven tail propeller is controllable.

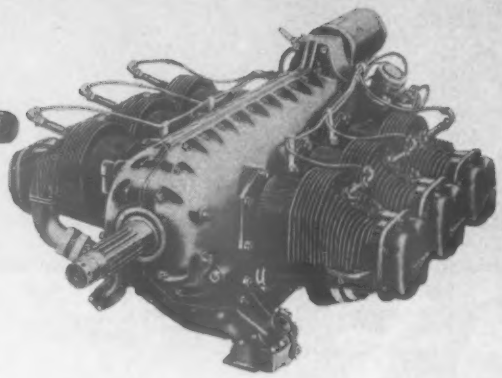
# Personal Plane Roundup

**Pertinent facts and figures on the 46 aircraft shown on the preceding pages are summarized in this handy table.**

| Manufacturer | Popular Name | Engine and HP[1] | Wing Span | Useful Load (lbs) | Wing Loading (lbs) | No. Places | Maximum Speed (mph) | Cruising Speed (mph) | Stalling Speed (mph) | Maximum Range (miles) | Service Ceiling (feet) | Rate of Climb (fpm) | List Price (fof) | Type Cert. No. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AERONCA | Champion | C-65 | 35'2" | 470 | 7.17 | 2 | 100 | 90 | 40 | 250 | 12,600 | 500 | $ 2,395 | 759 |
| AERONCA | Chief | C-65 | 36'0" | 460 | 7.15 | 2 | 100 | 90 | 40 | 420 | 10,800 | 500 | $ 2,585 | 761 |
| AERONCA | Chum | C-85 | 28'8" | 540 | ..... | 2 | 115 | 105 | 49 | 400 | 11,000 | 610 | ..... | None |
| ALL AMERICAN | Ensign | C-85 | 33'0" | 550 | 10.30 | 2 | 120 | 110 | 50 | 400 | 14,000 | 700 | 3,495 | None |
| BEECH | G17S | PW-450 | 32'0" | 1,650 | 14.34 | 5 | 212 | 201 | 55 | 1,000 | 20,000 | 1,250 | 29,000 | 779 |
| BEECH | D18S | 2-PW-450 | 47'7" | 2,885 | 24.40 | 7-9 | 230 | 211 | 61[4] | 1,070 | 21,200 | 1,250 | 60,440 | 765 |
| BEECH | Bonanza | C-165 | 32'10" | 1,060 | 14.35 | 4 | 184 | 175 | 46 | 750 | 18,000 | 950 | 7,345 | None |
| BELL | 47* | F-175 | 33'9"[2] | 612 | 2.35[3] | 2 | ... | 80 | ... | 200 | 9,700 | 950 | ..... | HTC-1 |
| BELL | 42* | PW-450 | 47'5"[2] | 1,445 | 2.87[3] | 5 | 125 | 100 | ... | 300 | 13,000 | ..... | ..... | None |
| BELLANCA | Cruisair Sr | F-150 | 34'0" | 900 | 13.00 | 4 | 168 | 154 | 40-45 | 650 | 17,000 | 1,130 | 5,950 | 773 |
| BENDIX | Model K* | C-100 | 25'0"[2] | ..... | ..... | 1 | ... | ... | ... | ..... | ..... | ..... | ..... | None |
| CALL | Callair | L-125 | 35'10" | 575 | 8.53 | 2 | 112 | 102 | 45 | 332 | 17,500 | 1,000 | 4,200 | 758 |
| CESSNA | 120 | C-85 | 32'10" | 680 | 9.10 | 2 | 120+ | 100+ | 41 | 450+ | 15,500 | 680 | 2,695 | 768 |
| CESSNA | 140 | C-85 | 32'10" | 560 | 9.10 | 2 | 120+ | 100+ | 41 | 450+ | 15,500 | 680 | 3,245 | 768 |
| COMMONWEALTH | Trimmer | 2C-85 | 35'6" | 870 | 14.80 | 3 | 134 | 115 | 48 | 450 | 14,000 | 850 | 5,985 | None |
| COMMONWEALTH | Skyranger | C-85 | 34'0" | 495 | 8.81 | 2 | 114 | 103 | 48 | 450 | 14,000 | 650 | 3,195 | 729 |
| CULVER | V | C-85 | 29'0" | 560 | 12.70 | 2 | 130+ | 115-130 | 60[4] | 700 | 13,100 | 660 | 3,950 | 778 |
| DANSAIRE | Coupe | 100 | 36'11" | ..... | 11.04 | 3 | 115 | 100 | 48[4] | 500 | ..... | ..... | (12) | None |
| ERCO | Ercoupe | C-75 | 30'0" | 460 | 8.80 | 2 | 127 | 110 | 48 | 515 | 14,000 | 750 | 3,450 | 718 |
| ESHELMAN | Winglet | F-100 | 30'0" | 615 | 12.4 | 2 | 135 | 118 | 50 | 496 | 15,000 | 900 | 2,995 | None |
| FAIRCHILD | 24 | opt.[5] | 36'4" | 874 | 13.25 | 4 | 137 | 118 | 53 | 639 | 14,000 | 655 | 8,875[6] | 535 |
| FIRESTONE | G&A 45-D* | L-150 | 28'0"[2] | ..... | ..... | 2 | 100+ | 80+ | ... | ..... | 10,000+ | 1,000+ | ..... | None |
| FUNK | F2B | C-85 | 35'0" | 470 | 8.0 | 2 | 112 | 100 | 37 | 350 | 15,000 | 800 | 3,695 | 715 |
| GLOBE | Swift 125 | C-125 | 29'4" | 585 | 13.00 | 2 | 153 | 140 | 50** | 500** | 16,000 | 1,000 | 4,395 | 766-1 |
| GRUMMAN | Widgeon | 2R-200 | 40'0" | 1,275 | 18.47 | 5 | 160 | 130 | 50 | 450 | 15,000 | 1,000 | 30,600 | 734-3 |
| HOCKADAY | Comet | C-125 | 33'0" | 564 | 11.50 | 2 | 140 | 125 | 55 | 500 | 19,000 | 1,150 | 3,425 | None |
| KAISER-HAMMOND | Aircar | L-220 | 40'0" | 1,175 | 14.00** | 4-5 | 140-150 | ... | ... | 550 | 20,000+ | 750-900 | (7) | None |
| LUSCOMBE | Silvaire 8A | C-65 | 35'0" | 540 | 9.00 | 2 | 115 | 105 | 37 | 350 | 15,000 | 900 | 2,995 | 694 |
| LUSCOMBE | Silvaire 8E | C-85 | 35'0" | 540 | 10.00 | 2 | 125 | 115 | 48 | 650 | 16,500 | 800 | ..... | 694 |
| MEYERS | MAC-125 | C-125 | 30'0" | 585 | 11.24 | 2 | 140 | 120 | 45 | 500 | ..... | 700 | (8) | None |
| NELSON | Dragonfly[9] | R-25 | 47'4" | 385 | 5.50 | 2 | ... | 65 | 38 | ..... | ..... | 240 | (10) | (9) |
| NORTH AMERICAN | Navion | C-185 | 33'5" | 1,019 | ..... | 4 | 160 | 150 | 54 | 700 | 15,600 | 830 | 6,100 | 782 |
| PIPER | Cub Trainer | C-65 | 35'2½" | 540 | 6.80 | 2 | 83 | 73 | 38 | 200 | 12,000 | 450 | 2,195 | 691 |
| PIPER | Super Cruiser | L-100 | 35'5½" | 800 | 9.80 | 3 | 115 | 105 | 49 | 600 | 12,600 | 600 | 3,205 | 780 |
| PIPER | Skysedan | C-165 | 34'8" | ..... | ..... | 4 | 160+ | 140 | 49 | 620 | ..... | ..... | ..... | None |
| REPUBLIC | Seabee | F-215 | 37'8" | 1,050 | 15.3 | 4 | 120 | 103 | 58 | 560 | 12,000 | 650 | 4,495 | 769 |
| ROCKET | Rocket 185 | L-190 | 30'10" | 900 | 15.0 | 3 | 200 | 185 | 54 | 925 | 15,000+ | ..... | 5,000 | 776-1 |
| ROSS | Sport Plane | L-65 | 30'0" | 440 | 6.80 | 2 | 103 | 90 | 38 | 230 | 14,000 | 560 | 1,495 | 732 |
| SIKORSKY | S-51* | PW-450 | 48'0" | 1,250 | 2.6[3] | 4 | ... | 85 | ... | 245 | 13,000 | 1,200 | 48,500 | HTC-2 |
| SOUTHERN | Southernaire | 2R-200 | 42'0" | 1,921 | 20.30 | 6 | 175 | 166 | 61 | 760 | 19,000 | 800 | ..... | None |
| SPARTAN | Executive | PW-450 | 39'0" | 1,854 | 19.18 | 5 | 220 | 203 | 60.4 | 1,067 | 24,080 | 1,340 | ..... | None |
| STINSON | Voyager 150 | F-150 | 34'0" | 1,006 | ..... | 4 | 133 | 125 | ... | 500 | 14,000 | 770 | 5,495 | 767 |
| TAYLORCRAFT | Ace | C-65 | 36'0" | ..... | 7.29 | 2 | 117 | 100 | 38 | 270 | 15,000 | 750 | 1,995 | 696 |
| TAYLORCRAFT | Twosome | C-65 | 36'0" | 470 | 7.10 | 2 | 117 | 100 | 38 | 505 | 15,000 | 600 | 2,600[11] | 696 |
| TAYLORCRAFT | Tourist | F-150 | 36'6" | 850 | 11.80 | 4 | 125 | 112 | 45 | 450 | 12,000 | 500 | ..... | 775 |
| WACO | Aristocraft | F-215 | 38'0" | 954 | 15.25 | 4 | 154[13] | 135[13] | 55 | 657 | 17,500 | 950 | ..... | None |

*Helicopter.
**Approximately.
[1]Engine manufacturers' code as follows: C-Continental; PW-Pratt & Whitney; F-Franklin; L-Lycoming; R-Ranger; W-Warner.
[2]Rotor disc diameter.
[3]Rotor disc loading.
[4]Landing speed at sea level.
[5]175-h.p. Ranger in-line or 165- or 185-h.p. Warner radial engines are optional.
[6]Prices: $8,875 with Ranger engine; $8,500 with 165-h.p. Warner and $8,850 with 185-h.p. Warner.
[7]Expected to be in "$5,000 class."
[8]Expected to be in "$4,000 class."
[9]A glider with auxiliary power, the Dragonfly is the first aircraft of its type to be certificated.
[10]Expected to be in the "$2,500-$3,000 class."
[11]Price of Custom model. DeLuxe model is $2,500; Standard is $2,400.
[12]Expected to be in "$3,000 class."
[13]At sea level.





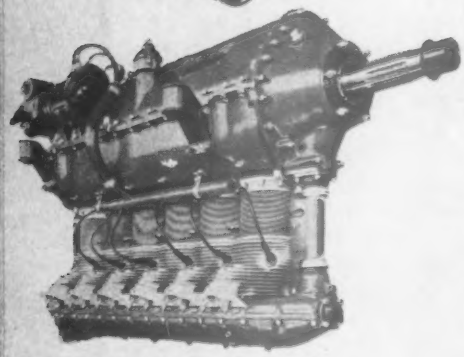
# PERSONAL FLYING

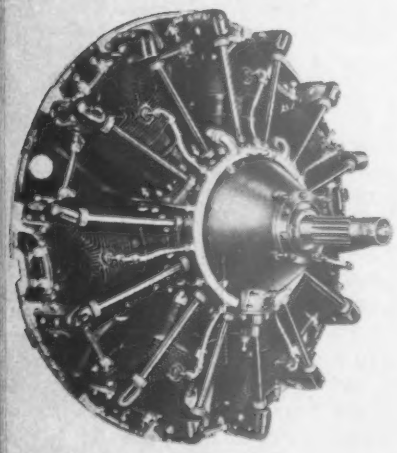
# *Engines*

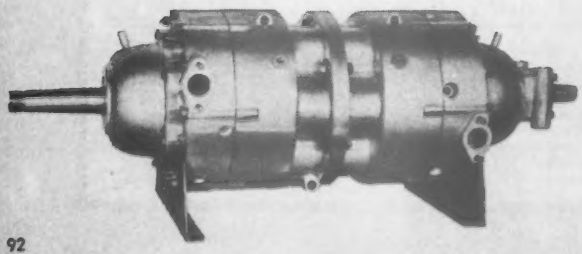
***New lightplane engines follow conventional designs but show constantly better weight-horsepower ratios.***

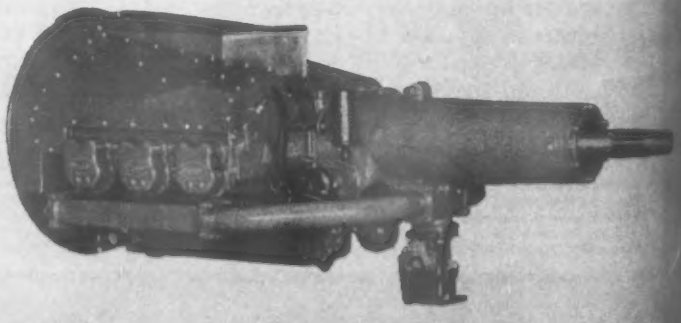
Just as successful lightplanes had to wait for successful lightplane engines, so increased performance in lightplanes hinges pretty much on the increased performance of engines. A decade ago the average lightplane was propelled by a 40-h.p. engine. Today the smallest production lightplane has a 65-h.p. engine, and the trend is upwards. For the four-place "family" plane, minimum horsepower seems to be about 150. Today's basic lightplane engine seems to be fairly well established as a horizontally-opposed air-cooled engine. Radial, inline and V-type engines are used in the higher horsepower brackets.

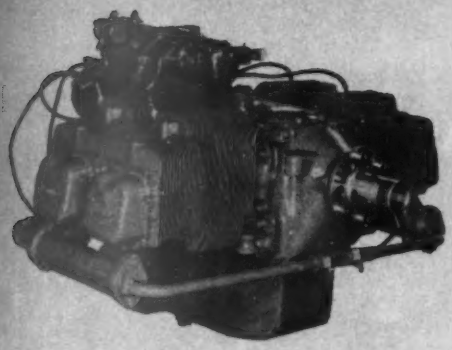
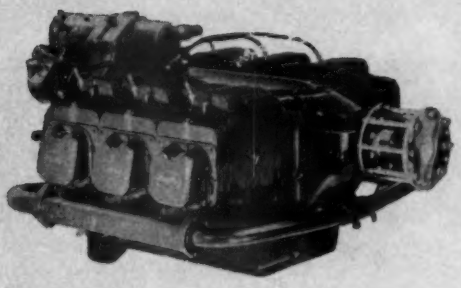
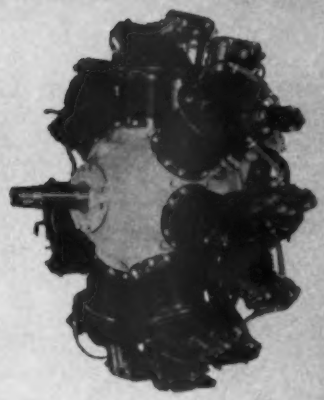
As power increases, weight-horsepower ratios decrease. Some 65-h.p. engines are the same basic design and weight as their 50-h.p. predecessors. Design refinements have accounted for some of the horsepower gains, but better fuels, permitting higher compression ratios, are of equal importance. Two notable trends are toward electric starters and fuel injection. The only radically new type in the accompanying list is the Hermann cam engine. So far as is known, no manufacturer is developing light gas turbines, which would well revolutionize lightplane design.



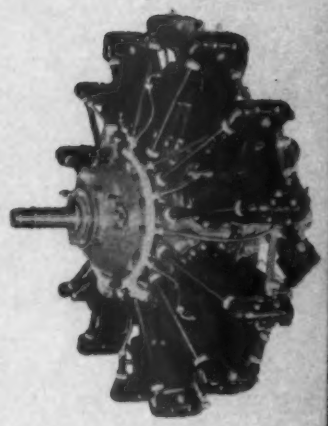
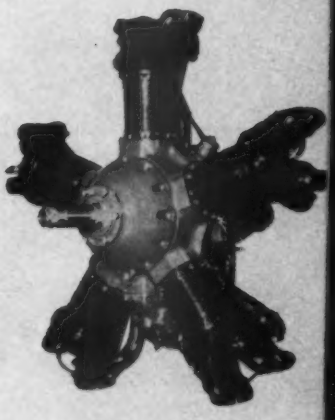




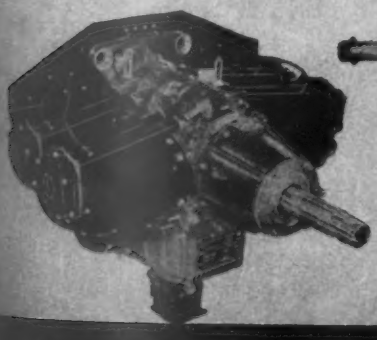
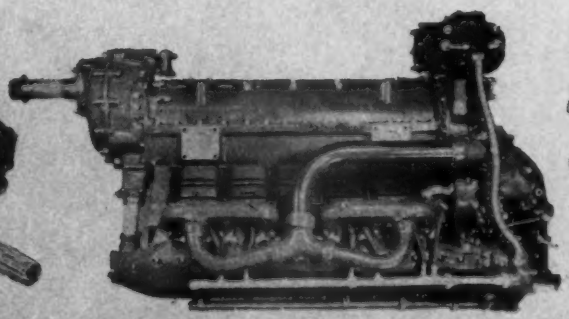
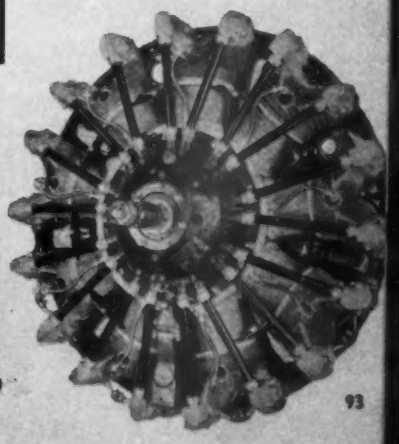


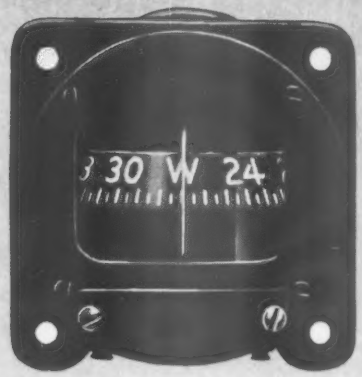




| ENGINE NAME | MODEL | NUMBER OF CYLINDERS | TYPE* | FUEL SYSTEM** | MINIMUM FUEL GRADE | DISPLACEMENT (CU. IN.) | DRY WEIGHT (LBS.) | TAKE-OFF H.P. | CRUISING H.P. | WEIGHT-H.P. RATIO |
|---|---|---|---|---|---|---|---|---|---|---|
| CAMERON | Four | 4 | I-L | inj. | ..... | 301 | ..... | 125 | 110 | ..... |
| CONTINENTAL | A-65 | 4 | H-O | opt. | 73 | 171 | 176 | 65 | 48.75 | 2.7:1 |
| | C-75 | 4 | H-O | opt. | 73 | 188 | 182 | 85 | 56.25 | 2.4:1 |
| | C-85 | 4 | H-O | opt. | 73 | 188 | 182 | 90 | 63.75 | 2.14:1 |
| | A-100 | 6 | H-O | opt. | 73 | 256 | 222.9 | 100 | 75 | 2.2:1 |
| | C-115 | 6 | H-O | opt. | 73 | 282 | 256.9 | 125 | 86.25 | 2.23:1 |
| | C-125 | 6 | H-O | opt. | 73 | 282 | 256.9 | 135 | 93.75 | 2.05:1 |
| | E-165 | 6 | H-O | opt. | 80 | 471 | 335 | | 123.75 | 2:1 |
| | E-185 | 6 | H-O | opt. | 80 | 471 | 335 | | 138.75 | 1.8:1 |
| FRANKLIN | 225 | 4 | H-O | carb. | 80 | 225 | 230 | 100 | 75 | 2.3:1 |
| | 335 | 6 | H-O | carb. | 80 | 335 | 321 | 150 | 113 | 2.14:1 |
| | Vert. 335 | 6 | H-O | carb. | 80 | 335 | 310 | 178 | ..... | 1.74:1 |
| | 500 | 6 | H-O | carb. | 80 | 500 | 488 | 215 | 161 | 2.27:1 |
| HERMANN ENG. CO. | Cam engine | 12 | (1) | carb. | 80 | 372 | 265 | 185 | 170 | 1.43:1 |
| JACOBS | O-240A | 4 | H-O | opt. | 80 | 241 | 200 | 100 | 75 | 2:1 |
| | R-755A | 7 | Radial | carb. | 80 | 757 | 505 | 300 | 225 | 1.68:1 |
| | R-755E | 7 | Radial | carb. | 91 | 757 | 570 | 350 | 260 | 1.63:1 |
| | R-915A | 7 | Radial | carb. | 80 | 914 | 565 | 375 | 275 | 1.51:1 |
| KINNER | K-5 | 5 | Radial | carb. | 73 | 372 | 304 | 100 | 75 | 3.04:1 |
| | B-5 | 5 | Radial | carb. | 73 | 441 | 312 | 125 | 93 | 2.50:1 |
| | B-54 | 5 | Radial | carb. | 73 | 441 | 312 | 125 | 93 | 2.50:1 |
| | R-5 | 5 | Radial | carb. | 73 | 540 | 335 | 160 | 113 | 2.09:1 |
| | R-55 | 5 | Radial | carb. | 73 | 540 | 345 | 160 | 113 | 2.15:1 |
| | R-56 | 5 | Radial | carb. | 73 | 540 | 362 | 160 | 113 | 2.26:1 |
| LYCOMING | 65 | 4 | H-O | carb. | 73 | 144.49 | 163.4 | 65 | 39 | 2.51:1 |
| | 100 | 4 | H-O | carb. | 73 | 233.3 | 243.17 | 100 | 60 | 2.43:1 |
| | 125 | 4 | H-O | carb. | 80 | 289 | 272.83 | 125 | 75 | 2.18:1 |
| | 160 | 4 | H-O | carb. | 91 98 | 289 | 376 | 170 | 96 | 2.21:1 |
| | 190 | 6 | H-O | carb. | 73 | 434 | 392.51 | 190 | 114 | 2.06:1 |
| | 260 | 6 | H-O | carb. | 91 98 | 434 | 435 | 260 | 144 | 1.86:1 |
| PRATT & WHITNEY | Wasp Junior[2] | 9 | Radial | carb. | 91 96 | 985 | 682 | 450 | 300 | 1.51:1 |
| RANGER | Six | 6 | I-L | carb. | 65 | 441 | 382 | 175 | 131 | 2.18:1 |
| | Six | 6 | I-L | carb. | 87 | 441 | 382 | 200 | 150 | 1.96:1 |
| | Twelve[2] | 12 | V-type | carb. | 91 | 773 | 759 | 520 | 308 | 1.46:1 |
| | Twelve[2] | 12 | V-type | carb. | 100/130 | 773 | 757 | 550 | 350 | 1.38:1 |
| WARNER SUPER SCARAB | 165 | 7 | Radial | carb. | 73 | 500 | 341 | 175 | 139 | 2.05:1 |
| | 185 | 7 | Radial | carb. | 73 | 550 | 344 | 200 | 124 | 1.86:1 |

*Code meanings are: H-O, horizontally-opposed; I-L, in-line.
**Code meanings are: inj., fuel injection; opt., optional; carb., carburetion.
[1]Barrel engine. The Hermann cam engine is the only liquid-cooled engine in this group. Supercharging is optional.
[2]Supercharged.



# PERSONAL FLYING *Instruments*

***The exacting and specialized job of manufacturing lightplane instruments is concentrated among the rather small group of companies listed here. A notable trend is toward the design of packaged instrument panels which look more and more like designers' dreams. The average personal aircraft of today carries more instruments than its counterpart of 10 years ago. This, along with the boom in plane manufacturing, has instrument makers working full blast.***

**AC Spark Plug** Division of General Motors offers perhaps the most extensive array of lightplane instruments now being made. The company will build instruments for any plane. It has built altimeters, airspeeds, tachometers, fuel gauges, fuel pressure gauges, oil pressure gauges and ammeters—a total of 13 different types.

**Aeromarine Instrument** Company builds altimeters ($22), sensitive altimeters ($28), compasses ($25), tachometers ($23), and airspeed indicators ($23). Aeromarine instruments can be furnished with luminous dials for $2 to $2.50 extra.

**Electric Auto-Lite** Company specializes in engine instruments. The company manufactures oil pressure gauges, ammeters, fuel gauges and temperature gauges.

**Eclipse-Pioneer** Division of Bendix Aviation Corp., designs and manufactures basic instrument panels for lightplanes and produces a wide variety of instruments. These include airspeed indicators, altimeters, rate-of-climb indicators, manifold pressure gauges, turn and bank indicators and aircraft gyro-horizon indicators.

**Frank Instrument** Company is a large manufacturer of altimeters and airspeed indicators which are sold in sets for as low as $10.50 per set. A new sensitive altimeter with readings down to 20 feet soon will be offered for about $10.

**Kollsman Instrument** Division of Square D Company, one of the large aircraft instrument manufacturers, produces three lines of instruments: Regular, Scout, and Helicopter. Regular instruments include compass, airspeed indicator, sensitive altimeter, manifold pressure gauge, tachometer, and suction gauge. Scout instruments include standard and sensitive altimeter, airspeed indicator, compasses, vertical speed (rate-of-climb) indicator, manifold pressure gauge, tachometer, and direction indicator. A stall warning indicator also is manufactured. Longines aircraft clocks are sold by Kollsman, though not manufactured by them.

**Stewart-Warner** Corporation is planning to introduce a complete line of aircraft instruments. This big automobile instrument manufacturer now produces airspeed indicators, tachometers, oil pressure gauges, oil temperature gauges, fuel and pressure gauges, and ammeters. An instrument panel is in use in several planes.

**Sperry Gyroscope** Company specializes in more complicated instruments than are likely to be found in the average lightplane, but one which will have increased use is the new Sperry attitude gyro. Other Sperry instruments include the Gyrosyn compass — a directional gyro synchronized with the magnetic field of the earth; directional gyros, gyro-horizon indicator, and an automatic radio direction finder.

**Weston Electrical Instrument** Corporation specializes in instruments which are generally too complicated for lightplanes. An exception is an electric tachometer. Weston also manufactures engine thermometers, ammeters and voltmeters.

**Other instrument companies,** manufacturing either only one instrument or specializing in instruments which are generally too complicated or expensive for lightplanes, are listed here: **Airpath Instrument** Company manufactures compasses which are standard equipment in 19 personal planes; **G. M. Giannini & Company's** Autoflight instruments manufactures a directional indicator called the "Skyguide;" **Thomas A. Edison,** Incorporated, manufactures thermometer indicators, engine gauges, fuel gauges and aircraft fire detection systems; **Elgin National Watch** Company manufactures a small aircraft 8-day clock; **Fairchild Camera & Instrument** Corporation produces a "Moonglow Light" for instrument illumination; **General Electric** Company builds an electric tachometer indicator and a lightweight inkless tachometer recorder; **Instrument Design,** Incorporated, manufactures the McGuire Safety Pilot — a light autopilot for small aircraft; **Searle Aero** Industries produces a light for instrument illumination. **Servair, Incorporated,** makes a turn indicator sensitivity control; **Sherrill Instrument Company** manufactures compasses; **Waltham Watch Company** makes an 8-day clock.

# PERSONAL FLYING

# *Radios*

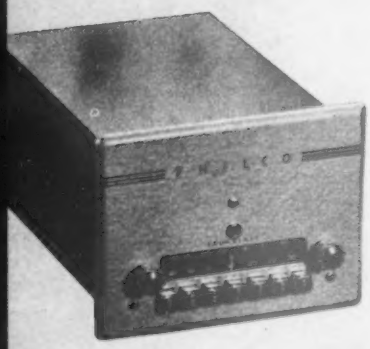
***Post-war radio equipment for private airplanes is available in many types and prices. Those here sell for under $300.***

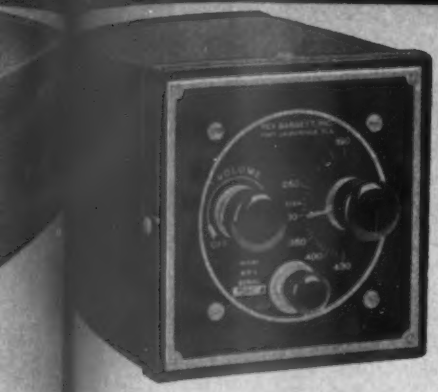
Rapidly becoming as much a part of the airplane as basic engine and flight instruments, the radio now is available for the private pilot in many prices and combinations. Depending on his needs, the private pilot can buy a two-way unit for $300 or more, or just a receiver for as little as $40. For the first time he can also order VHF transmitters. No VHF receivers have yet been announced.

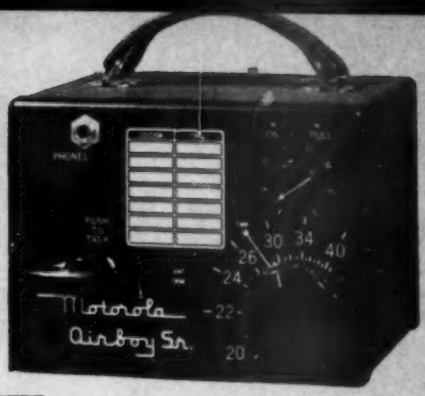
Some sets receive radio range, broadcast and airways communication frequencies, making possible flying the range, listening to or homing on commercial entertainment stations. For basic radio use in the U. S. only the 200 to 400 kc. radio range bands are necessary. With these, the pilot can fly the range and hear tower and weather transmissions.

The sets covered in this survey sell for $300 or less as FLYING believes this is just about as much as the average pilot is willing to pay. Installation and taxes are usually extra.

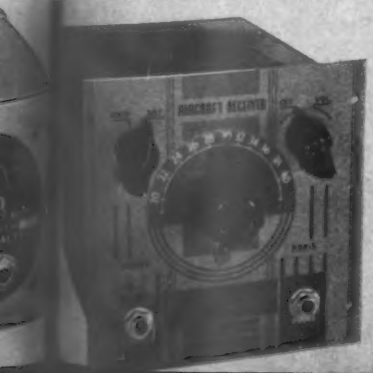
Many of these sets can be ordered at the same time the order for the airplane is given and installation will be made at the factory. Many aircraft manufacturers already are installing radio as standard equipment. Others are engineering their instrument panels so that a standard radio set can be installed quickly.

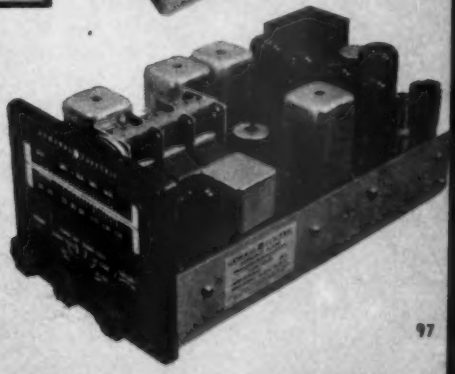







| Manufacturer | Model | Voltage Required or if uses Batteries | Weight (pounds) | VHF Number of channels | Transmitting Frequencies furnished | Receives | | Microphone Extra | Headsets Extra | Price |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Radio Range | Broadcast | | | |
| AIRADIO, INC. | Two-Way | 12 | under 11 | ..... | 3105 kc. | yes | yes | ..... | ..... | $185.00 |
| AIRCRAFT RADIO CORP. | Transmitter | 12 | ..... | 5 | 131.7 & 131.9 mc. | ..... | ..... | no | ..... | 127.00 |
| | Receiver | 12 | 15 with Transmitter | ..... | ..... | yes | no | ..... | no | 241.00 |
| BELMONT RADIO CORP. | Raytheon Radio-phone | 12 | 14 | ..... | 3105 kc. | yes | yes | yes | yes | 149.50 |
| BENDIX RADIO CORP. | VHF Transmitter | 12 or 24 | 2.5 | 5 | 131.7 & 131.9 mc. | ..... | ..... | yes | ..... | 115.00 |
| | Bendix Receiver | 12 or 24 | 5 | ..... | ..... | yes | yes | ..... | yes | 110.00 |
| | Bendix Flight-phone | 12 or 24 | 7 | 5 | 131.7 & 131.9 mc. | yes | yes | yes | yes | 165.00 |
| ELECTRONIC SPECIALTY CO. | Model 209 Transmitter | 12 | 13 | ..... | 6210 kc. | ..... | ..... | yes | ..... | 180.00 |
| | Model 116 Receiver | obtained from transmitter | under 3 | ..... | ..... | yes | no | ..... | yes | 70.00 |
| | Model 210 Transmitter | battery | 2 less batteries | ..... | 6210 kc. | .... | ..... | yes | ..... | 52.50 |
| | Model 117 Receiver | battery | under 5 | ..... | ..... | yes | no | ..... | yes | 49.50 |
| GENERAL ELECTRIC | Model AS-1B | 12 | 12 | ..... | 3105 kc. | yes | yes | yes | yes | under 200.00 |
| HALLICRAFTERS CO. | Skyfone C-2 | 12 | under 12 | ..... | 3105 kc. | yes | yes | yes | yes | 129.50 |
| HARVEY-WELLS | AT-3B Transmitter | 6 or 12 | 9.5 | ..... | 3105 kc. | ..... | ..... | yes | ..... | 74.50 |
| | ATR-3 Transceiver | 6 or 12 | 12.5 | ..... | 3105 kc. | yes | yes | yes | yes | 129.50 |
| HEATH CO. | HBR-5 Receiver | batteries | ..... | ..... | ..... | yes | no | ..... | yes | 39.50 |
| | HT-4 Transmitter | ..... | 25 with receiver | ..... | 3105 kc. | ..... | ..... | no | ..... | 129.50 |
| LEAR, INC. | Learavian Portable | batteries or house current | 14 | ..... | ..... | yes | yes | ..... | ..... | 59.50 |
| | PXer Tr-1B | 12 | 15 | ..... | 3105 kc. | yes | no | no | no | 125.00 |
| | PXer Tr-2B | 12 | 12 | ..... | 3105 kc. | yes | yes | no | no | 150.00 |
| MAGUIRE | Transmitter | 12 | under 11 | ..... | 3105 kc. | ..... | ..... | yes | ..... | 69.00 |
| | Receiver | batteries | 4 | ..... | ..... | yes | no | ..... | yes | 29.00 |
| GALVIN MANUFACTURING CO. | Avigator | 12 | 13 | ..... | 3105 kc. | yes | yes | no | no | 263.50 |
| | Airboy Receiver | batteries | 4 | ..... | ..... | yes | no | ..... | yes | 31.00 |
| | Airboy, Sr. | batteries | 7.5 | ..... | 6210 kc. | yes | no | no | no | 79.95 |
| PHILCO CORP. | Model AC 7-200 | 12 | 10 | ..... | 3105 or 6210 kc. | yes | yes | no | no | 119.50 |
| RCA | AVR 104 Receiver | battery | 10 | ..... | ..... | yes | no | ..... | yes | 99.50 |
| | AVT 114 Transmitter | 6, 12 or 24 | ..... | 5 | 131.7 mc. | ..... | .... | ..... | ..... | under 200.00 |
| | Model 109 Portable | batteries or house current | under 14 | ..... | ..... | yes | yes | ..... | ..... | under 50.00 |
| REX BASSETT, INC. | MC-6A Transceiver | batteries | 12 | ..... | 3105 kc. | yes | no | yes | yes | 124.50 |
| | MC-6B Transceiver | 12 | 3.5 | ..... | 3105 kc. | yes | no | yes | yes | 117.00 |
| | MR-3A Receiver | batteries | 2.5 | ..... | ..... | yes | no | ..... | yes | 54.50 |





# PERSONAL FLYING
# *Propellers*

***Conventional laminated wood propellers still predominate among the models manufactured for planes of under 450 h. p., but there is a distinct trend toward adjustable, controllable and constant-speed types which give better flight performance per horsepower.***

**Aeromatic and Aeromaster** propellers, manufactured by the Koppers Co. are for engines from 65 to 330 h.p. The three Aeromatic models are constant-speed types and the Aeromaster is ground-adjustable. Hubs are chrome-nickel-molybdenum and the blades are laminated maple. Weights vary from 28 up to 62 pounds for larger models.

**Aeroprop,** made by the Aeroproducts Division of General Motors, is a selective constant-speed type and only one model (450-h.p.) is made for personal planes. Both hub and blades are made of steel.

**Beech** Aircraft Corporation manufactures four basic propeller models, all of which are controllable and adjustable. The R-000 series is for engines from 65 to 100 h.p.; R-100 series for 100 to 185 h.p. and the R-202 and R-203 for engines up to 245 h.p. Propeller hubs are of steel and the twin blades are fashioned from laminated birch.

**Fahlin** Manufacturing Co. produces three general types of fixed-pitch propellers for lightplanes designed for use with engines of from 65 to 85 h.p. The propellers are made of birch and weigh 12 pounds.

**Flottorp** Manufacturing Co. produces an extensive line of fixed-pitch propellers for engines of from 40 to 225 h.p. These propellers are made of wood, have a stainless steel leading edge, and range from 66 to 96 inches in diameter. Weights vary.

**Freedman** Aircraft Engineering Co. manufactures three ground-adjustable propellers for 85-to 125-h.p. engines and a controllable-pitch unit for 125-h.p. engines. Hubs are made of steel; blades are of composite wood. Adjustable models weigh about 20 pounds and the controllable, 38 pounds.

**Gardner** Propeller Co. fabricates a fixed-pitch propeller for a 65-h.p. engine. It is made of birch and weighs 11 pounds. Under experiment is a non-mechanical propeller of birch veneer and thermosetting phenolic glue which will change pitch automatically depending on loads imposed.

**Hamilton Standard** Propellers specialize in units for higher-horsepower engines. Their 22D30 hydromatic unit can be used on 450-h.p. engines. It weighs 175 pounds and is full feathering. Hub is made of steel and the blades of duralumin.

**Hartzell** Propeller Co. makes fixed-pitch propellers of laminated birch, one adjustable, and one controllable model. The birch propeller for the 65-h.p. engine weighs 10 pounds. The adjustable and controllable models have steel hubs and canvas-reinforced plastic blades. The adjustable design is for 85-h.p. engines installations, the controllable for 220-h.p.

**G. B. Lewis** Co., manufactures a line of fixed-pitch propellers for engines of 65 to 200 h.p. Propellers are made of wood and vary in weight from 9 to 18 pounds.

**Iso-Rev,** made by Thomson Industries, is a constant-speed propeller for installation on 175- to 225-h.p. engines. The propellers are full-feathering and have a 90°– plus range. Hubs are steel, aluminum and magnesium and the blades are of wood.

**McCauley** Corporation produces both an adjustable steel propeller and a fixed-pitch Met-L-Prop made of aluminum alloy. The adjustable model handles engines of 225 h.p. and at maximum diameter weighs 82 pounds. The fixed-pitch is for 65 to 250 h.p. engines and weighs 22 pounds at maximum diameter.

**Sensenich Brothers** make a wide variety of fixed-pitch wood propellers for engine installations of from 40 to 220 h.p. Diameters vary from 69 to 98 inches.

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# REPORT FROM WASHINGTON

By FRED HAMLIN

LOOK FOR headlines in January concerning the largest research program ever contemplated by a nation. It has been on the Federal fire since August, 1944, when President Roosevelt proposed it and, things being what they are in these parts, should be an actuality by August, 1947, if not a few weeks sooner. It will be called the National Science Foundation and will be an extension—but big—of the Office of Scientific Research and Development, one of the war-time brain centers that helped create the atomic bomb and not a few spectacular aviation developments.

You may recall that during the autumn of 1945 a galaxy of scientists testified that the Foundation was a wonderful idea. Mr. Truman also endorsed it, and numerous Congressmen and Senators. Enabling legislation was introduced with great enthusiasm in both the House and the Senate and last summer the Senate passed its version by a close vote. But there were more delays because the House didn't like the Senate version and it was finally agreed that the matter should be tabled till Congress reconvened in January. Hill experts predict that at least something in the way of a law will undoubtedly be forthcoming before the end of next summer.

### Inventor's Boon

Difficulty in getting an agreement on the Hill lay in three aspects of the Foundation—control, patent rights, and inclusion of social sciences and the humanities in the work of the organization. Mr. Truman favored this last, as well as a set-up that would make the directors of the Foundation his appointees. He and a following on the Hill also favored "free dedication" of discoveries made under the Foundation's guidance—patent rights would go to the Government and be passed out to industry free of royalties.

Opposition rose to all three points and a Truman version of the Foundation, introduced by Senator Harley Kilgore of West Virginia, passed the Senate by the narrowest of margins. It was this version that the House side-stepped last summer. Now indications are that the House will come back with a version taking control from the President, leaving the Foundation free to make deals on patent rights with private industry, and excluding social sciences. A final compromise will become law.

Whatever the outcome on the controversial points, the Foundation should become a boon to inventors—aviation or otherwise—since it will be in a position to offer subsidies to those experimenting in new fields as well as scholarships to youngsters with scientific talents. In the words of the late President Roosevelt: "New frontiers of the mind are before us, and if they are pioneered with the same vision, boldness and drive (as during the war) we can create a fuller and more fruitful employment and a fuller and more fruitful life."

### GI Flying

The boom in flight instruction reported a few months back (Flight Training and the GI Bill, FLYING, August), is showing up in figures being assembled here by the Civil Aeronautics Administration. Best index to the boom is CAA's report that the number of approved flying schools more than doubled in the first seven months of 1946, with applications still coming in strong during the fall. During July alone 1,021 ground and flying schools were already operating, as contrasted with only 405 in January. . . . Figures on exactly how many GIs are taking the courses and what the enrollment will total were yet to be tabulated when this went to press but it promises to rival CPT figures, according to close observers of the situation. . . . Other things worth noting in connection with the program are preliminary reports by inspectors in the field which would seem to run counter to fears by civilian instructors that returned veterans would make difficult pupils. The contrary seems to be true. The boys who came through a war know the value of safety, and fly with caution. Spartan School of Aeronautics, for example, reports only two students washed out for violations of safety rules, and Parks Air College, traditionally tough on violators, had not washed out a single G.I. when last heard from.

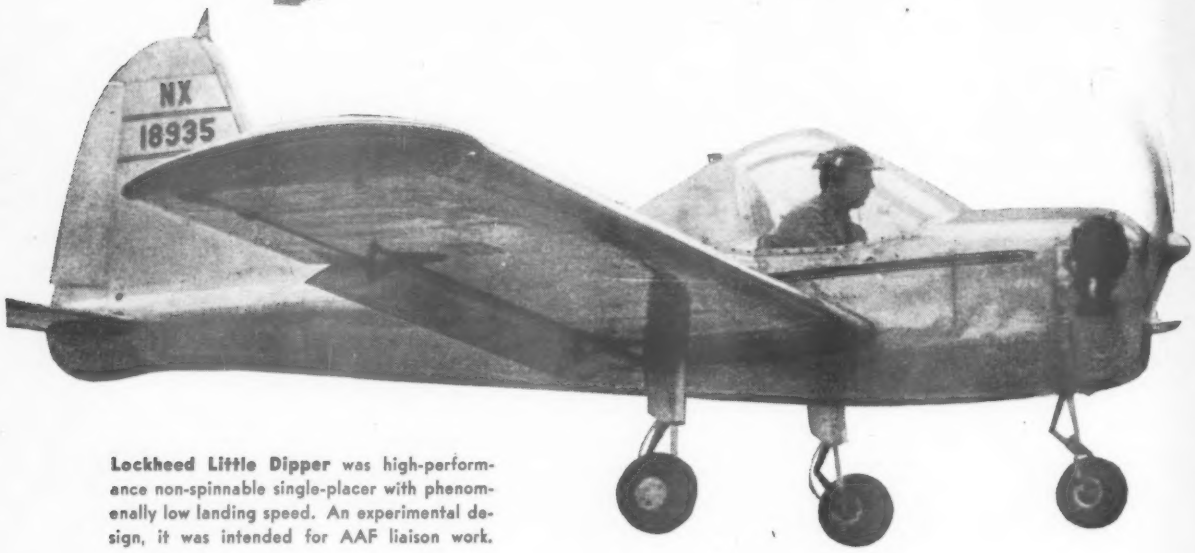
### Clipped Wings?

Correct us if we're wrong, but after a careful perusal of the Navy conclusions on the Bikini atom bomb tests, we gather that certain admirals have come up with the following solution: build battleships that can withstand the bomb and load 'em down with antiaircraft and guided-missile equipment to withstand aerial bomb carriers. It's inconvenient and disconcerting, this aerial stuff, the admirals seem to reason, but the battleship is here to stay. . . .

Still open to correction if we err, we thought it might be a good idea to check on what the Naval War College, post graduate school (*Continued on page* 146)

**Ex-servicemen** make excellent aviation students under GI Bill of Rights. Ex-GI's Shaver and Delf train at Fort Collins, Colo.

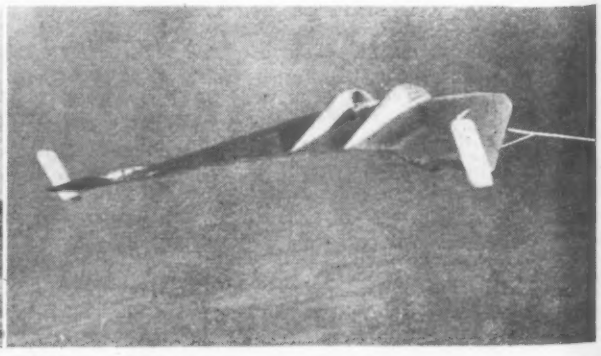
# HAVE YOU SEEN?




**Lockheed Little Dipper** was high-performance non-spinnable single-placer with phenomenally low landing speed. An experimental design, it was intended for AAF liaison work.

**JB-3 rocket** under wing of Douglas Invader was launched from conventional high-speed warplanes against German V-1 flying bombs. A proximity fuse in the nose of JB-3 exploded the missile automatically if it came close enough to the fast-flying buzz-bomb.

**Built for Siam,** six North American P-64s were taken over by AAF before they could be shipped. Note similarity to Texans.

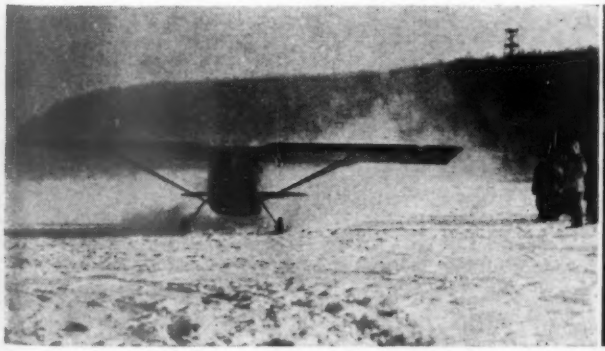


**Canadian tailless glider** is believed prototype of model to be tested with a V-1 type of pulse jet engine mounted atop it.

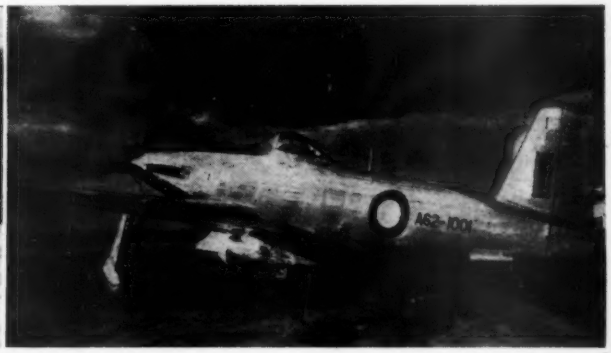
**Two Model 18 Beechcrafts** bought by the Royal Canadian Mounted Police will don skis this winter for year-round service.

**Junkers Ju-52,** recently bought by U. S. Public Roads Administration, will haul Pan American highway supplies in Costa Rica.

**Fairchild Husky** is new Canadian bush freighter at Montreal. Design characteristics (doors on each side of fuselage, hatch at rear under tail) were recommended by bush pilots. Plane seats eight to 11, carries 2,200-pound payload, cruises at 122 m.p.h.



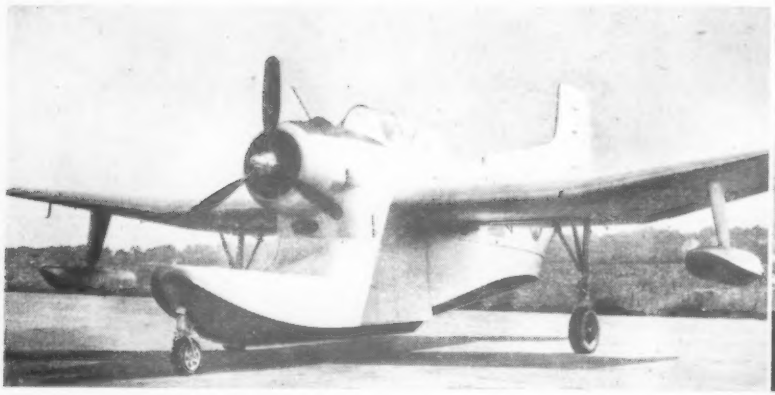
**Novel lightplane** built by S. J. Wittman of Oshkosh, Wis., was first craft with Wittman steel landing gear now used by Cessna.



**Commonwealth CA-15,** Australia's 1,900-h.p. fighter-bomber, 35-ft. wing, upswept tail, armament "comparable to Mustang."

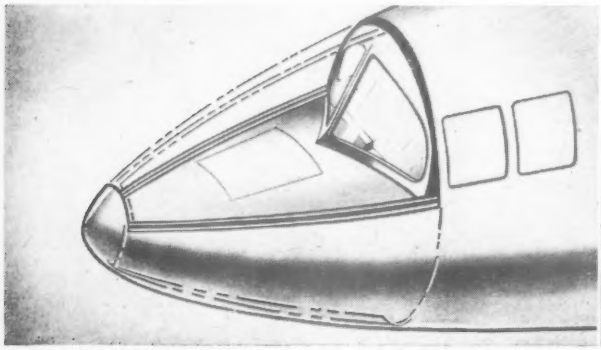
# HAVE YOU SEEN?

*(Continued)*



**New Columbia XJL-1 Navy amphibian** has hull markedly similar to old Loening OL-8 (right). The XJL-1 is powered with a 1,425-h.p. engine, has speed of over 200 m.p.h. It is JATO-equipped for rescues in heavy seas. Wings fold for carrier duty.

**Tricky take-off** was made by this DC-3 recently from small airport at Olean, N. Y. Plane carried 6,000 pounds of chicken feed and five persons. Length of the runway is 1,840 feet. The pilot, a war veteran, had to fly up a river bed to get climbing speed.



**Retractable windshield** will be used on Republic Rainbows for airlines, but not on Army XF-12. It is for bad-weather landings.

**Experimental Avenger** has been converted to carry heavy freight cargo in torpedo compartment. The plane has a 1,750-h.p. engine.

# LONDON LETTER

## By Maj. OLIVER STEWART

British Authority, Editor of Aeronautics

BRITISH aviation at last got its first genuine peace-time season under way just as the summer closed. Air racing started again; there were statics and acrobatics at the Society of British Aircraft Constructors' display; research workers unbent at the Royal Aeronautical Society's garden party; and air industry men crammed French conversation in preparation for the Paris show in November.

In the air racing, which was started by the Cinque Ports Aero Club over a course near Folkestone, on the South Coast of England, the event for low-powered aircraft drew a good entry. The high-speed handicap attracted five of England's finest pilots, including young Geoffrey de Havilland, son of the founder of the firm, who flew a jet-propelled de Havilland *Vampire* and who was later killed when his plane exploded.

The race was acclaimed as the first in the world in which a jet-driven aircraft had taken part; but the *Vampire's* 427 m.p.h. round the course did not win because the plane was disqualified by a starting error.

The success of the Cinque Ports meeting failed to give a final answer to the question of whether air racing in England was reviving. But it did emphasize that there is a large spectator-public for pylon races over short courses when the aircraft are in view most of the time.

### International Race Rules

Air racing was one of the subjects discussed at the *Federation Aeronautique Internationale* meeting in London in September. Some time ago Princess Bibesco offered to give a Trophy for a high-speed event resembling the Schneider Trophy in organization and prestige. The idea is to commemorate Prince Bibesco who was President of the F.A.I. for many years.

Although some take little interest in it, all the big aviation countries—including the United States and Great Britain—are members of the F.A.I., and it is the only body which is empowered by international agreement to lay down the conditions of international competition in aircraft performance.

Hence F.A.I. records carry more weight than unofficial claims. The Royal Air Force world speed record in 1945 (606 m.p.h.) and this year (616 m.p.h.) were done under F.A.I. rules. So was the RAF distance record of 7,158 miles non-stop set in November, 1938, by two Vickers Wellesley aircraft. The F.A.I. rules will apply to future competition.

### Jet Step

British engine makers are determined to press forward with their claims for powering transports with turbojets. An ingenious first step in this direction was an Avro *Lancaster* which was recently taken over by the Rolls-Royce Company.

The ordinary piston engines were left in the two inboard positions and Nene turbojets were installed in the two outboard positions. The consequence of this arrangement is that the aircraft can be flown either on jets or on piston engines or on a combination of both. It provides an excellent means for testing the theories of those who wish to retain propellers and those who wish to discard them.

Rolls-Royce engineers are still favoring the turbojet and not the propjet but they are making at least two propjet engines, presumably as a safeguard. That's the story at present.

The Napier Company is also considering propjets and recently a patent was published showing details of a scheme this company adopted some time ago for linking together piston engine and gas turbine. The plan was first put forward by Ricardo but whether Napiers intend to make the engine has not been revealed.

### Knowing Your Own Airport

A useful demonstration of radio aids to navigation was given by the Ministry of Civil Aviation on behalf of PICAO during September. A great many devices were shown, most of them originally developed for military purposes. One of them, the Airfield Surface Movement Indicator is expected to have an important application at fog-bound airports in the London region.

By means of this device, which is called ASMI, a continuous picture is provided to the control officer of the movement of aircraft taxiing on the airfield. The indicator is worked from an aerial producing a one degree horizontal beam, the aerial rotating (*Continued on page* 144)

**Hybrid Lancaster,** with two turbojet engines and two Merlin engines, flies on jets alone with Merlin engine props feathered.

# I Learned About Flying From That! NO. 85

By

Capt. S. B. WALCOTT

as told to Maj. Charles M. Fischer

**Capt. Salvadore B. Walcott** joined AAF after being released from German prison camp. He was RCAF Spitfire pilot when captured by the Nazis.

*Clouds were closing in as the Spitfire pilot took off. Then his instruments went out.*

IT WAS a miserably cold, clammy day in December, 1941. A wet mist was falling and as I walked toward the line of *Hurricane* fighters sitting on the grass, I could feel the moisture clinging to the hairs of my eyelashes. Low-hanging clouds were overhead.

I was a member of an RAF operational training unit stationed in England and was in the final stage of transition flying. The pace of the past few days had been terrific for we had heard of the Jap attack on Pearl Harbor and the declaration of war against Germany. I and other Americans of the unit now felt that we were going to fight for our own country as well as for the British.

We were tense, a tenseness which I believe materially reduced our judgment. We were eager for action and aware that the cautious, precise flight training days through which we had just passed were soon to be over.

My instructor, Flight Lieutenant Gillingham, joined me.

"Well, Walcott, old chap, you've had 50 hours time on Mark I *Hurricanes* now and it's time you try out this new kite—the Mark II. There's very little difference except that it has more power."

His eyes swept the horizon. "I say, it's a bit stinking though, don't you think?"

I nodded. "Yes, sir, but I don't mind. I'll stay under it. Anyway, I don't think it will get any better today. I think it's just as well I take off now."

"I think it will be clearer out over the ocean," he advised. "Go straight out along the valley to the water, test-fire your guns and return."

We saluted and he walked away, each footstep bringing up a small puddle of water in the heavy wet grass.

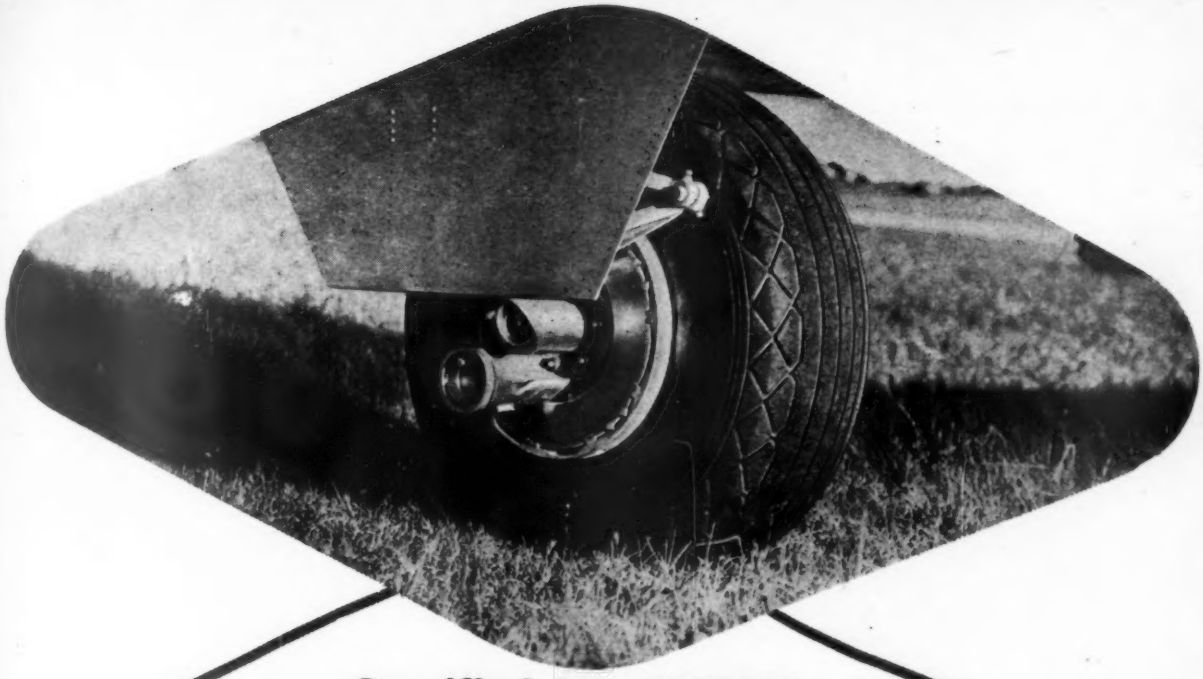
I settled myself into the cockpit and adjusted my parachute and quick-release harness and started the engine.

I reached into the pocket of my jacket and pulled out a pair of soft, two-fingered mittens and put them on. I had "borrowed" them that morning from one of our drivers whom I was sure didn't need them as badly as I did. The regulation five-fingered gloves we normally wore just weren't warm enough for my southern blood. I grinned with self-satisfaction as I taxied out. My hands felt warm and comfortable as I opened the throttle for take-off.

The Mark II "kite" didn't seem much different from its predecessor. It had a little more torque on take-off and a slightly better climb. However, I didn't have much time to observe these features before I leveled off at 500 feet, just below the clouds, and headed for the sea.

The weather was worse than I thought. The ceiling gradually lowered as I approached the coastline until I was barely skimming the tree tops. I began to wonder if I could get through. I checked my blind-flying instruments and was further disturbed to find the artificial horizon out of commission and lying on its side. It gave a feeble attempt to right itself as I stared. Evidently the gyro couldn't gain enough speed to bring it up to normal.

I glanced ahead and saw a small ridge of hills extending to the right and left, disappearing from sight into the mists. I couldn't see over them. I knew I was caught. I had to go up or turn back. To turn back today was unthinkable, so without hesitating I jerked back on the stick and was instantly in the clouds. I watched the airspeed indicator and the rate-of-climb needle, to give me the fighter's altitude, and started (*Continued on page* 134)



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On more and more modern personal planes you will find that Goodyear wheels, brakes, tires and tubes are standard equipment—for the same reason that the majority of passenger airliners use Goodyear landing gear. Long experience has proved it the safest, most dependable landing equipment on any type of aircraft! That's because all Goodyear products are built with an extra margin of ruggedness to insure safety under emergency conditions, to give long, trouble-free performance in any service. You'll be safer, too, with Goodyear's Airfoam seat cushioning that prevents pilot fatigue. And precious weight will be saved with Pliocel fuel cells. See the Goodyear dealer at your airport or write: Goodyear, Aviation Products Division, Akron 16, Ohio or Los Angeles 54, California.

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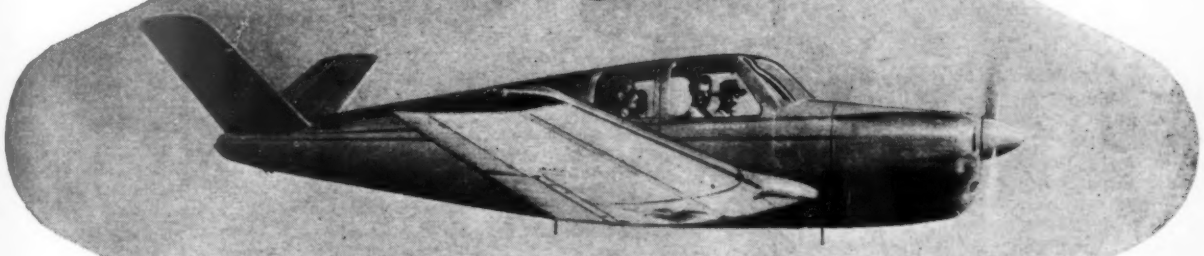


MORE AIRCRAFT LAND ON GOODYEAR TIRES THAN ON ANY OTHER KIND

**SEE THE GOODYEAR EXHIBIT**

**NATIONAL AIRCRAFT SHOW**
**November 15-24, 1946**

Airfoam, Pliocel—T.M.'s The Goodyear Tire & Rubber Company

# AOPA NEWS

Aircraft Owners and Pilots Association is a service organization for the private pilot or aircraft owner. AOPA's full time staff is devoted to helping the individual pilot. Its aim is: "To make flying more useful, less expensive, safer and more fun."

Headquarters are: 1319 F Street N.W., Washington 4, D. C. Mmbers also receive a special "AOPA" edition of FLYING, newsletters and confidential aviation data. Opinions expressed in this column are not necessarily those of FLYING Magazine.

### AOPA SERVICE

Service to members is AOPA's long suit but seldom has the association received a more sincere compliment than that of a member-pilot who recently wrote as follows:

"I have been flying since 1940, most of this time with the Army. Seldom have I visited a civilian field without hearing an enthusiastic AOPA member enumerate the many services of your organization. I have followed your various activities as reported in FLYING throughout the years, and thus have long realized the advantages which are enjoyed by AOPA members.

"Upon returning to civilian status six weeks ago, I purchased a plane with which I have done some very extensive traveling. At every port I landed I felt like an immigrant, not having an AOPA card. These past few weeks have taught me that AOPA membership is fully as important to a plane owner and pilot as his propeller. Sign me up! Enclosed find check and application."

EDWARD M. FROST, JR.
Towson 4, Maryland

### LOCAL AIRPORTS

A golden chance for smaller communities and cities to obtain an airport is now available under the Federal Airport Act, Public Law 377, which will be carried out by CAA Regulation Part 550 (proposed). Half the cost of the airport or improvement will be met by the Government and the other half by the local agency which is involved.

Over a seven-year period, starting June 30, 1947, approximately $100,000,000 yearly has been set aside for new airports and improvements in existing airfields. Emphasis of the program will be on smaller airports.

Information given to AOPA cites that as the first step a letter requesting Federal aid for an airport must be forwarded by the local, city, county or state government to the CAA, preferably through the regional office. The association urges that interested persons contact the supervisor of airports at the regional or district CAA office.

Listed below are the nine major steps required of a sponsor—such as a city, county or state—that is interested in participating in the Federal Aid Airport Program:

1. The location must be included in the then current National Airport Plan. This is done by CAA, after careful study of the country's aeronautical needs. Funds can be ear-marked for local use.

2. A city, county or state must file a project request through CAA's District Airport Engineer, to have a given project included in the coming year's program. Use Form ACA 1623. This does not necessarily obligate CAA to so program a project; nor is the applicant bound by these preliminaries.

3. If a project is selected, CAA makes a tentative allocation, advising the sponsor or applicant on Form ACA 1641, forwarding it through the appropriate district airport engineer.

4. A project application is filed with CAA's district airport engineer by the sponsor or the applicant using Form ACA 1642.

AOPA Breakfast Flight Chairman James Campbell (right) is welcomed to Canada by Minister of Trade and Industry Leslie Eyers after flight landed in British Columbia. Such flights are gaining in popularity.

5. "Sponsor's Assurance Agreement" (Form ACA 1642) must be executed by sponsor.

6. CAA, if satisfied that all regulations have been met, approves Step 4 as outlined above.

7. Administrator then makes an offer on Form ACA 1632 to pay U.S. share of cost.

8. If acceptable to sponsor or applicant, a grant agreement (Form ACA 1942) shall be executed.

9. Sponsor then proceeds to perform all necessary construction work, adhering to CAA's standards, policies and procedures.

### WEATHER NEWSCASTS

Mark Twain didn't start the Weather Bureau but his classic comment must have inspired them to "do something about it." The Bureau's latest motion endeavors to get weather information to private flyers more easily and more often.

Meeting with AOPA to discuss proposals for better service, Weather Bureau officials have decided to include more weather data useful to non-commercial pilots and aircraft owners in the regular forecasts given by the commercial radio stations.

Other possible means of broadcasting weather were discussed, including: separate aviation forecasts over commercial stations, a proposed CAA station broadcasting weather reports, and a test to add weather reports to the simultaneous range-voice stations.

Reason for the new schemes is to make available weather information through more channels so that pilots will not have to depend only on overtaxed Weather Bureau telephones which are frequently busy. Information would still be offered as at present by telephoning the airways forecaster at the local Weather Bureau station or airport.

### RECORDATION ILLS

Aircraft Recordation Section of the CAA is requesting the co-operation of personal aircraft owners and pilots in properly executing forms concerning sales and ownership of aircraft. In talks with AOPA, recordation officials assert that wrongly filled-out forms delay recording, and make the present $5 fee necessary.

A good portion of the troubles with four forms—Bill of Sale, CAA 502; Application for Registration, CAA 501; Registration Certificate, CAA 500; and Certificate of Ownership, CAA 1160—are expected to be eliminated if new and simpler forms now proposed are subsequently adopted.

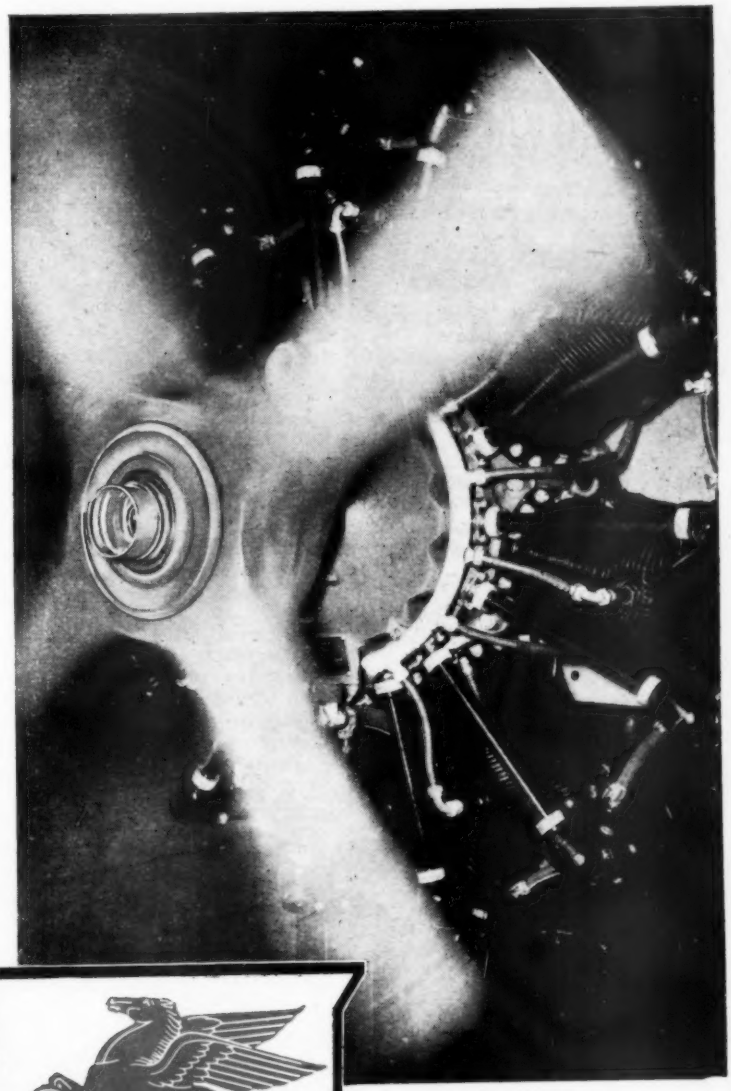
Figures given to AOPA representatives visiting the Recordation Section noted that approximately 35 per cent of the above four forms were improperly or incompletely executed. Such forms were delayed, a letter sent to the person requesting recordation, and held until the error was corrected.

The present fee of $5, which AOPA is urging be reduced to a similar charge for automobiles of about $1, cannot be cut, CAA says, as long as this extra work is needed. Improper forms now run between 500 and 1,000 per week.

AOPA suggests: (1) read the instructions and comply with them; (2) fill out ALL blanks properly; and (3) be sure legal requirements have been met, such as notarization, seal and date notary's commission expires. An improvement in the above will prove a real help toward lowering the present costly fee. END.

# TO BREAK IN THE "Workhorse of the Air"

## JACOBS Uses and Endorses Mobiloil Aero



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# The Non-Skeds

(*Continued from page 45*)

azines, lumber, machinery, fountain pens, baled silk, barrage balloons, penicillin, chocolate candy, corpses, nylon stockings, iron lungs, and a photo-finishing machine.

This company—one of the largest of the so-called "non-skeds"—flew 399,845 passenger miles and 169,556 ton miles of freight in a single month. Its contracts call for flying fresh fruits and vegetables from California to the east and Kosher meat from the midwest to New York City.

Non-scheduled international flights already girdle the globe. Pacific Overseas Airlines, a contract air carrier, makes eight round trips a week between the United States and Tokyo for the AAF Air Transport Command, in addition to California-Hawaii operations.

Under contract with UNRRA, Pacific Overseas Airlines made the first commercial cargo flight to China, carrying 10,000 pounds of surgical supplies, vaccines, and serums valued at $100,000.

Trans Air, Inc., recently carried the Soviet Embassy staff from New York to Santiago, Chile, using DC-3s. With newly-delivered DC-4s, the company is considering transatlantic charter flights.

The Caribbean and Central and South America is criss-crossed by veteran-operated airlines. They fly machinery and supplies in and out of remote towns and mining communities, carry tropical fruits northward and manufactured goods southward. They carry passengers, too, along with the cargo, and make special passenger hops when a profitable number of riders can be rounded up.

Air cargo brokers have sprung up in large cities to bring together the non-scheduled operators and potential shippers. Travel agencies, too, are making hookups with these new airlines for charter flights in this country and abroad.

Not all these companies operate on a grand scale. Many of the veterans have developed new types of small-plane, short-haul business. In Milwaukee, for example, Midwest Airways runs a department store delivery service with Piper *Cubs*. Packages for out-of-town customers are flown to the airport nearest the customer's home, where they are picked up by truck for final delivery. In winter months, the *Cubs* are equipped with skis.

In Arizona, a laundry has expanded its business and its profits by twice-weekly delivery and pickup flights to remote towns within a 150-mile radius. Aerial ambulance services have sprung up in many cities, thereby making the services of specialists anywhere in the world readily available to stricken patients.

Old standbys, like crop-dusting and coyote hunting, provide a living for many flyers. But recent experiments in planting rice fields and in reforesting large areas promise use of many planes in these fields. New wartime techniques in aerial photography are being applied to various kinds of civilian mapping and survey work.

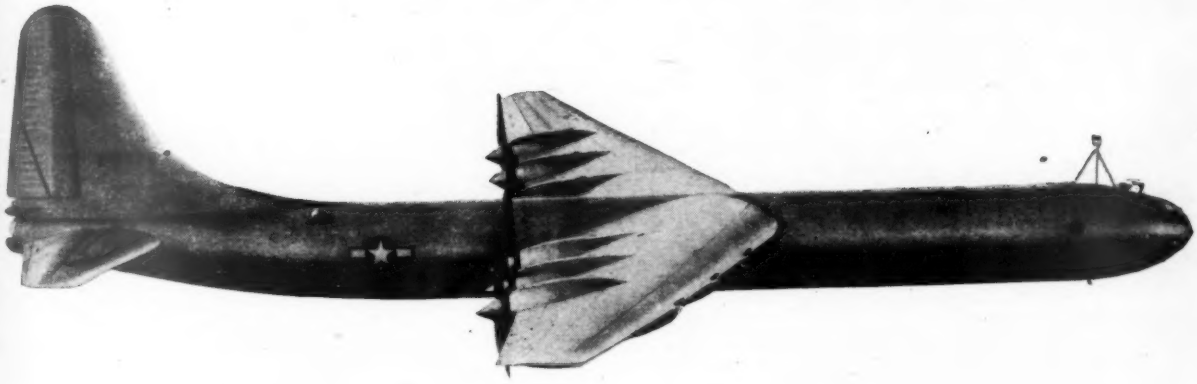
Will these 2,700 new air transport companies grow and prosper? The outlook is bleak and gloomy for many of them, particularly those with limited capital. The seeds of bankruptcy, in many cases, have been sown by the very conditions which brought the companies into existence.

Virtually all these airlines are using surplus military planes, purchased at a small fraction of their original cost. They must eventually be replaced by new airplanes costing, on the average, five to 10 times as much as the surplus equipment. Few of these veteran-operated lines can hope to set aside the huge sums they will

FLYING

"After awhile ya never notice the leg space in them small airplanes."

# 3 great new planes add their might to American Air Power



### B-36—the world's biggest bomber

The mammoth B-36—first of a fleet of such bombers now being built for the Army Air Forces—is designed to carry 10,000 pounds of bombs a distance of 10,000 miles. It has a maximum speed of 300 m.p.h., plus.

It is powered by 6 engines with a total of 18,000 horsepower. Its fuel tanks are so large that 2 railroad tank cars are needed to fill them. Its tail fin is as high as a 4-story building, and its wing spread is as great as that of two B-24 Liberator bombers, with 10 feet to spare.

Designed and built by Consolidated Vultee, in conjunction with the U.S. Army Air Forces, the great B-36 is a mighty symbol of peace-loving America's determination to remain strong in the air—to preserve the peace through strength!

### P-81—the world's most powerful jet escort fighter

With a new-type gas turbine in its nose, driving a propeller, and a straight jet engine in its tail, the trim, long-range P-81 escort fighter develops as much power as most 4-engine bombers—flies at a speed of more than 500 miles per hour.

### L-13—the world's most versatile liaison plane

The L-13, heavily loaded, can take off and land "on a dime." With one pilot, it is designed to carry either two litter patients and attendant, 3 passengers, wire laying equipment, aerial camera, special radio and loud-speaker equipment, or 600 pounds of cargo. Wings fold back to permit easy towing by truck.

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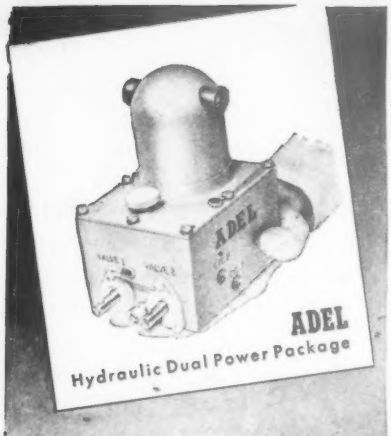
**B-24 Liberator bomber • B-32 Dominator bomber • Catalina patrol bomber • Coronado patrol bomber • and other famous war planes**

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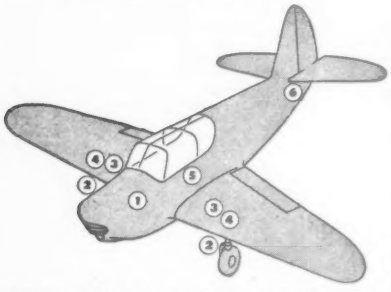

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need for replacement in just a few years.

Also, the scheduled airlines are rapidly getting delivery on new planes. Lack of equipment on scheduled lines funneled quantities of business to non-scheduled operators. This was particularly true of passenger traffic. When plenty of seats are available on regular airlines, will passengers pay premium prices for sitting in bucket seats and munching sandwiches between New York and Miami?

Finally, the surplus planes in use today, such as the converted C-47s and C-53s, are inefficient cargo carriers. Ton-mile operating costs will come tumbling down to as low as nine or 10 cents as soon as cargo planes like the Fairchild *Packet*, the Northrop flying wing, and the Burnelli reach quantity production. Consolidated-Vultee is talking about direct operating costs as low as three or four cents a ton-mile with new equipment.

The scheduled airlines—and many of the better-financed non-scheduled operators—will be able to buy these more efficient planes. What about the small companies trying to get along with surplus planes? They will find themselves squeezed, probably crushed, between the high operating costs of their old-style cargo planes and the increasing cost of keeping the old planes airworthy.

The scheduled airlines have slashed their cargo rates even before getting delivery on efficient cargo planes. They are making new contracts with well-established, experienced distribution organizations like American Railway Express. And threats of rate wars, although only whispered as yet, are an ominous possibility facing small operators.

Most serious of all, for some of the veteran-operated lines, is a threatened economic crackdown by the Civil Aeronautics Board, which has virtual life-and-death power over American aviation. The Board has been charged by Congress with "the encouragement and development of an air transportation system properly adapted to the present and future needs of the foreign and domestic commerce of the United States, of the Postal Service, and of the national defense."

The scheduled airlines, operating under certificates of convenience and necessity issued by the Board, were "encouraged and developed" in careful accordance with this Congressional mandate. In many instances they served areas and communities which were unprofitable from an operating standpoint, but were necessary from the standpoint of the Postal Service or of national defense. In such cases, the Government made up the loss through mail subsidies.

Paternally guided by the Board and nourished by airmail subsidies, these scheduled airlines grew from small beginnings into giant companies. Under the Board's supervision they established a reputation for safety which pushed air travel to new all-time highs. And eventually they reached a point where they were carrying airmail at a profit, both to the U.S. Government and the taxpayer.

The Board has served blunt notice that it will not permit this scheduled airline system, established under Congressional orders, to be ripped apart by newcomers to the field. It will not permit any non-scheduled operators to enjoy the advantages of scheduled operation without shouldering the responsibilities of a scheduled, certificated carrier.

The Board believes that most of the new non-scheduled veteran airlines are in fact scheduled airlines, even though they call themselves non-scheduled. From the Board's viewpoint they have been operating illegally ever since they began.

A few of the non-scheduled operators apparently agree with the Board, and have requested certificates of convenience and necessity as scheduled operators. Most of them, however, are trying to fend off the Board's proposed restrictions.

The Board has proposed a stringent set of regulations under which all non-scheduled operations must be of a definite "tramp-steamer" type, with only occasional flights between any two points.

If these economic restrictions are finally adopted by the Board, many of the new veteran-operated companies will have to do one of three things:

1. Drop their present customers and seek new fields. This would be a critical financial blow to any airline operator.

2. Apply to the Board for a certificate of convenience and necessity. This is long-and-drawn-out, and apt to be too expensive for most small operators. The CAB now has on file more than 500 applications for scheduled routes and feeder lines. Most applications represent an investment of thousands of dollars in surveys, investigations, and legal fees. A small airline operator cannot afford to gamble the costs of such an application against the chance that he may possibly, months or years later, be certified.

3. Go out of business. This doesn't have much appeal to the men who battled over the skies of Germany and Japan. They are fighting, and fighting hard, for the privilege of carrying on unlimited flights within the United States and outside the continental limits.

In their battle to keep their airlines alive, the veterans have formed several associations. The most vocal is the Institute of Air Transportation, headed by Brig. Gen. Lawrence J. Carr, Ret. In full-page newspaper advertisements headed, "Why Throttle Us?", they have protested many CAB proposals. And they have started a campaign to secure relief through Congressional action.

The veterans' cause has popular appeal and may carry considerable weight in Congress. If it chooses to do so, Congress can change its mandate to the Board, and change the rules under which the Board operates.

And the non-scheduled airlines have some powerful friends. Recently the CAA Advisory Committee for Non-Scheduled Flying urged the Board, in effect, to "go easy" in regulating the veterans out of business. Said one fixed-base operator:

"These veterans have built up a new industry without a cent of subsidy or a single airmail contract.

"Maybe they are off base legally. I'm not a lawyer—I wouldn't know. But I do know they've damned well earned the right to keep on making a living in the business they've created." END

# UP-UP-UP!

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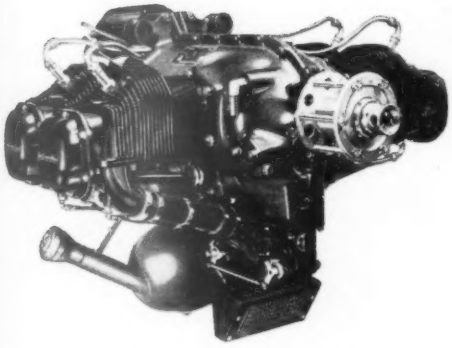

When you take delivery — "f.a.f." — of that new 1946 plane, the chances are that you'll fly away with Continental Red Seal power. For Continental leadership, in volume as well as in quality, stands today at an all-time high.

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Red Seal engine production will go up and up still further during the next few months, for new plant facilities are being added as rapidly as this can be done. But the prime consideration, then as now, will be adherence to the quality standards which, maintained over the years, have made Continental Red Seal aircraft engines "fliers' first choice."

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The large, legibly marked compass card is mounted on a permalloy tipped pivot in a jewel, assuring highest sensitivity. Compass always remains steady, free from sway, and won't jam with normal rolls and pitches of the plane . . . ample clearance space permits the card to tilt up to 28° . . . All compasses are vibration, altitude, and temperature tested. Exclusive built-in compensators permit finger-tip compensation even in the air.

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MODEL 1368 AVIATION COMPASS WITH HEELING CORRECTOR

Similar to, and slightly larger than, Model 430 above. Has Quadrantal, Semi-circular and vertical or Heeling correction for precise, accurate compensation. Requires no correction card and assures steady, reliable performance at all times.

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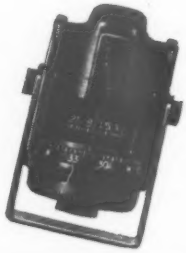

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# Mark Those Airports!

(*Continued from page 47*)

craft on the grass is always permitted.

Any portion of the field which is unsafe is marked with a white cross comprising 60-foot stripes, five feet wide, and the danger area is outlined both horizontally and vertically with yellow or white stripes and brackets.

If the field no longer is in use, as in the case of abandoned military airports, a similar white cross appears at the ends of the runways.

To indicate the runway in use, its compass heading is indicated by large two-figure placards, black on yellow, on the sides of the control tower, a frequent practice at American ports. A portable white landing tee is also placed at the down-wind end and to the left of the runway in use. When it becomes necessary to change this, a smoke signal is used in the signal square and the tee in this area is removed until the change has been made.

But in the United States there continues to be totally inadequate airport markings. What's even more amazing is the fact that many of these ports themselves will be inadequate—though they are listed on aviation charts as satisfactory.

When our CAA "designates" an airport, that information goes to the Coast and Geodetic Survey, which agency then marks the airport on its charts. But such designation, and the resultant marking, merely means that civilian flying in the air space over the airport does not interfere with military aviation and, of course, that the *location* of the field is approved. There is no requirement in the entire process that the field be suitably equipped, marked or maintained. Yet 99 out of 100 pilots logically would assume that a CAA-designated airport marked on their charts would be adequate for use.

It was precisely this situation that led John R. West, California businessman and National Aeronautics Association councilor for his state, to launch a one-man crusade for standardized markings. Actually, West's campaign began after a close call on a mis-marked airport.

West owns an *Ercoupe* which he uses extensively for business trips. Recently his wife accompanied him on such a trip to Salt Lake City. Business finished, they decided to fly to Southern Oregon to visit some friends. Getting out his Government charts, West found a little town marked with the familiar cogged circle only eight miles from his destination. The legend at the bottom of the chart confirmed that this device signified a "municipal or commercial" airport.

So the Wests took off and, in due time, arrived over the town in question. But about all they could see around the town was an expanse of wheat fields. Finally they did spot a cleared area which, by process of elimination, *had* to be the airport. It was on the side of a hill, a crudely cleared uneven bit of land. A tattered windsock on a nearby church was the only evidence that this might be the "municipal or commercial" airport. West "dragged" the field four times be-

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fore he finally set down his ship. The landing was successful chiefly because West is a veteran of hundreds of flying hours.

When their visit was concluded, West shipped his wife and their baggage by car to a good airport some distance away. Then, after once carefully studying the wavy terrain, he managed to get his plane into the air without accident.

Big crusades sometimes come from small beginnings like that. Anyway that's what started West to thinking constructively about standardized airport markings. He reasoned that "in a short time we are going to have thousands and thousands of new private flyers. Relaxed pilot-licensing regulations indicate that they will have a minimum of flying experience. About the first thing these inexperienced pilots will want to do is go for a cross-country flight. They'll get out their charts, find a likely destination with a field marked as a municipal or commercial airport, and they'll set out. It may turn out to be the kind of a field I found—chopped out of a wheat field, neglected, entirely unsafe for the novice. That means accidents, more people frightened away from flying, and aviation progress seriously retarded."

Upon investigation West soon found that the CAA was extremely hesitant about insisting on minimum equipment and maintenance standards before approving a field for inclusion on the charts. Such a move would invite additional responsibility—and additional criticism from operators. The initiative, West saw, would have to come from the pilots themselves.

Just to get things started, West drew up the following tentative schedule of minimum requirements which he believes an airport should set up and maintain in order to get on the charts and stay there.

1. The field must not be in the line of air traffic to and from another existing airport, or, if it is, flight patterns and training areas that will not interfere with such traffic must be established and rigidly enforced.

2. In the exact center of the field there should be a white circle, the diameter of which is to be a certain percentage of the length of the runway. Two and one-half per cent, which would give a 50-foot circle for a 2,000-foot runway, is suggested. (The CAA now recommends such a circle but does not require it.)

3. In this circle, parallel to the main runway, the name of the field should be displayed so that it will be instantly legible from at least a 1,500-foot altitude from whichever direction the flyer approaches. This means that the airport's name is to be written twice, once in each direction, and in large letters.

4. At the ends of each runway should be painted the standard Army marking designating its length. This comprises one long bar for each 1,000 feet and a half bar for 500 feet of runway length.

5. Adjacent to the marking for length should be placed the letters "L" or "R" indicating whether the field uses a left or right traffic pattern.

6. If the field is equipped with a radio control tower, the compass heading in degrees (less the last digit) also should be painted at the ends of the runways.

7. At the most prominent position on the field, there must be a tetrahedron proportionate in size to the length of the runway. One-half of one per cent of the main runway length is suggested, with a minimum of 15 feet. This must be painted the most discernible color, as determined by the Bureau of Standards, and mounted over a black earth or bituminous background that will set it off—this circle to be 25 per cent larger than the tetrahedron itself. For determining direction in which to land, windsocks, tees and inverted Ls must give way to the arrow-shaped tetrahedron which is simpler to understand. The size of the tetrahedron is important. All pilots know what it is to hunt all over a large airport for a tiny tee or other such marking.

8. As close as possible without causing obstruction there must be a windsock at *both* ends of *each* runway, of a standard color for all airports, and mounted over black earth or a bituminous substance. Sock and circle are to be 75 per cent the size of the tetrahedron up to a suitable maximum. This is to indicate runway wind velocity, crosswinds and steadiness.

9. For multiple operation airports, where take-off is made on concrete or macadam and landing on adjoining dirt, sod or gravel, the take-off runway should be marked "Take Off" at each end. The landing area should be marked "Land" and the entire area outlined with lime, (*Continued on page* 118)

***Only time will tell*** how great a slice of the world's transportation, both freight and passenger, will eventually be airborne. Much will depend on how well airlines will be able to compete with other forms of transportation. Truck and bus operators, for example, hope to speed schedules, improve payloads and cut costs through the use of engines built to take advantage of the extra available power in high antiknock gasoline. In the same way, improved aviation gasoline offers an opportunity for developing even more powerful and efficient aircraft engines which will help keep down operating costs.

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paint or white boards sunk flush with the ground. Many pilots have hovered for long periods waiting for a clear runway, not knowing whether the adjacent dirt or grass is safe and usable for a landing. The outlining of the landing area is essential since some multiple operation fields have a "no man's land" between the take-off and landing areas which is unsafe. This also will tend to eliminate the dangerous business of cutting across runways after landing.

10. Recommended, but not required, are arrows or other markings indicating gas pit locations, tie-down areas, visitors' areas and overnight storage areas.

The net result of adopting this sort of a marking system would be that a stranger could approach an unfamiliar field and learn at a glance what field it is, how to enter traffic, in which direction to land, how much runway he has to use, what the wind conditions are—all without losing a moment. He could drop down, enter traffic and land without delay.

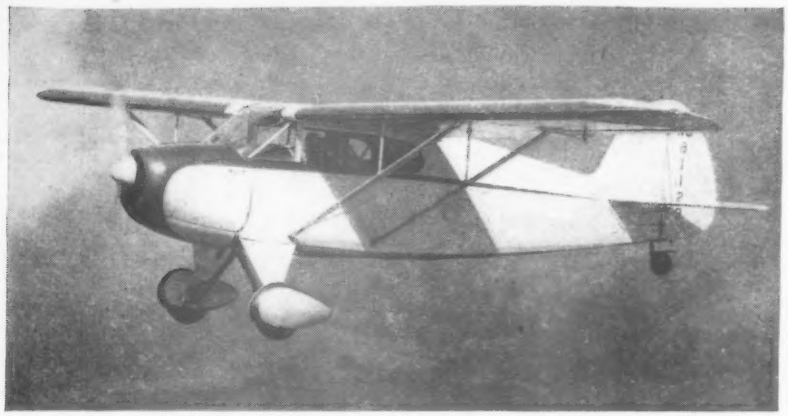
With all markings at all airports the same color, and with locations of the various aids standardized, pilots could approach a field knowing that at the end of the runway they would find pattern instructions, runway length and information concerning whether to land on the paved runway or on the adjacent dirt. To be sure it was the field they sought, they would check information in the center circle. In short, all pertinent data would be found in certain standard places or else the airport wouldn't be on aviation charts.

Under this plan, only when these basic requirements had been met could an airport operator apply to CAA to have his field shown on aviation charts.

Instead of the current systems of chart markings which require 12 different symbols to indicate conditions, the newly-charted field could be shown by one of only four symbols. There would be a cross for a field whose owner will not improve it to the minimum standards and which, therefore, is to be used only in emergencies; a circle for a privately owned field meeting the minimum standards; the present logged circle for a similar municipal field and a double circle for military airports.

The CAA would be required to maintain and mark similarly its own intermediate fields. Doing so would increase by nearly 10 per cent the number of usable airports for small planes. At present, many of CAA's fields are inadequately marked and poorly maintained. While adequate for emergency landings of airliners with large wheels many of them are unsuitable for small planes.

"Take the guess work out of cross-country flying and our charts by positive regulation and forceful maintenance of standards through the CAA," West and his farsighted followers demand. "If we don't, we are going to have an appalling number of new pilots cracking up on inadequate airports and bringing back the idea that aviation is a pretty risky thing for the non-professional. If this happens, all the impetus given private aviation during the war is going to be lost." END

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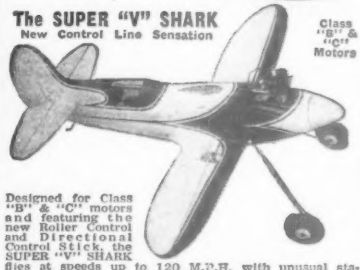

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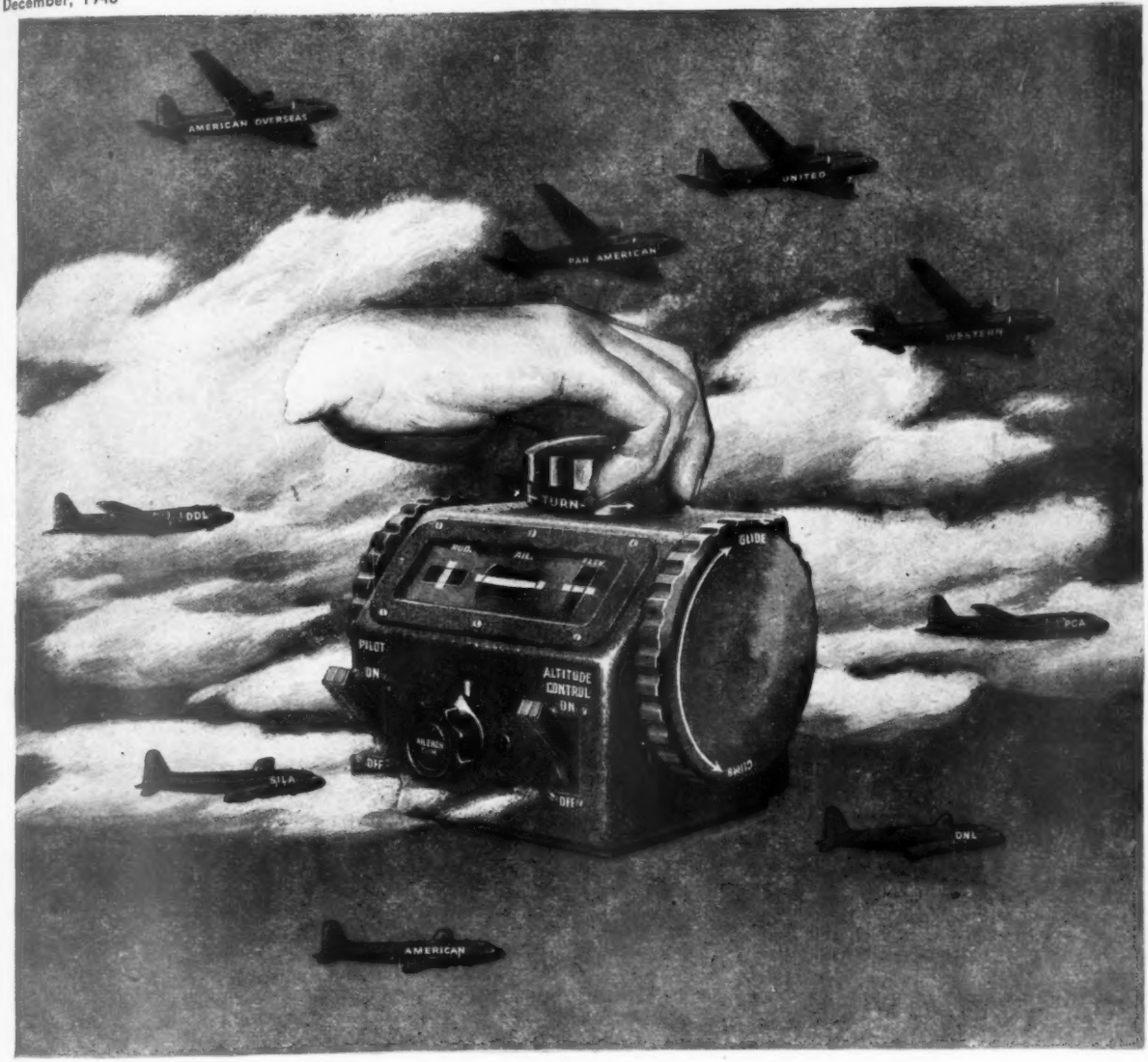


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# The Aeronca Chief

(*Continued from page 62*)

which this article deals. The other is the *Champion*, one of the best tandem trainers on the market.

Despite the fact that the *Chief* has just a 65-h.p. Continental engine, which means a fairly slow cruising speed of between 85 and 90 m.p.h., there is much to be said for it as an economical cross-country airplane for the private owner. Economy is the *Chief's* big selling point. It is a deluxe two-place side-by-side lightplane, fitted out in excellent taste, and sells for $2,585 flyaway Vandalia, O., which is quite reasonable for a deluxe lightplane these days. But of course the buyer must sacrifice something; in the *Chief* it is largely cruising speed.

There is nothing overdone or freakish about the *Chief*. It simply is the 1946 refinement of the pre-war *Chiefs*—all of which had an excellent record. Except for a few sales-stimulating points—like a more eye-appealing cabin, more soundproofing, a new mechanical starter, and wheel pants—the *Chief* is quickly recognizable as the direct descendant of the pre-war *Chief*. Yet, despite the age of its design, the current *Chief* is one of the more attractive lightplanes to be seen at airports.

I flew two *Chiefs* for this article. The first seemed somewhat sluggish and heavy on the controls; I found later that it was a special job and that it weighed about 200 pounds more than the standard *Chief* when fully loaded. My respect for this design went up considerably at that point; the overloaded *Chief* had performed very well in the air.

The standard *Chief* I flew was NC-9065E. It carried the normal gross load of 1,250 pounds. At that weight we got off the ground in 15 seconds into a 10 m.p.h. wind. Altitude of the airport (Vandalia, O.) was 1,000 feet above sea level.

Best rate of climb is at 55 m.p.h. indicated air speed. At that speed, and under the prevailing conditions, the best I was able to get in three climbs was 400 f.p.m. The overloaded *Chief*, incidentally, climbed 340 f.p.m. Based on my experience, the average *Chief* owner can safely count on at least 400 f.p.m. and many of them will doubtless get more than that. Since the service ceiling is only 10,000 feet, however, it is plain that the *Chief* will not be as much at home in the mountain regions of the west as it is in the middle west and the east.

This little airplane has some of the best stall characteristics I've yet found. You cut the power, then pull the nose high. At the stall the air speed reads between 38 and 40, and the nose drops straight ahead, but only a little below the horizon. There is excellent aileron control at all times. The *Chief* will spin, but the pilot must work at it.

Maintaining altitude at minimum speed is actually fun. Holding the air speed at about 42 m.p.h., and the engine at 1,600 r.p.m., the *Chief* seems to hang over one spot on the ground. The engine noise level is so low at reduced power that you

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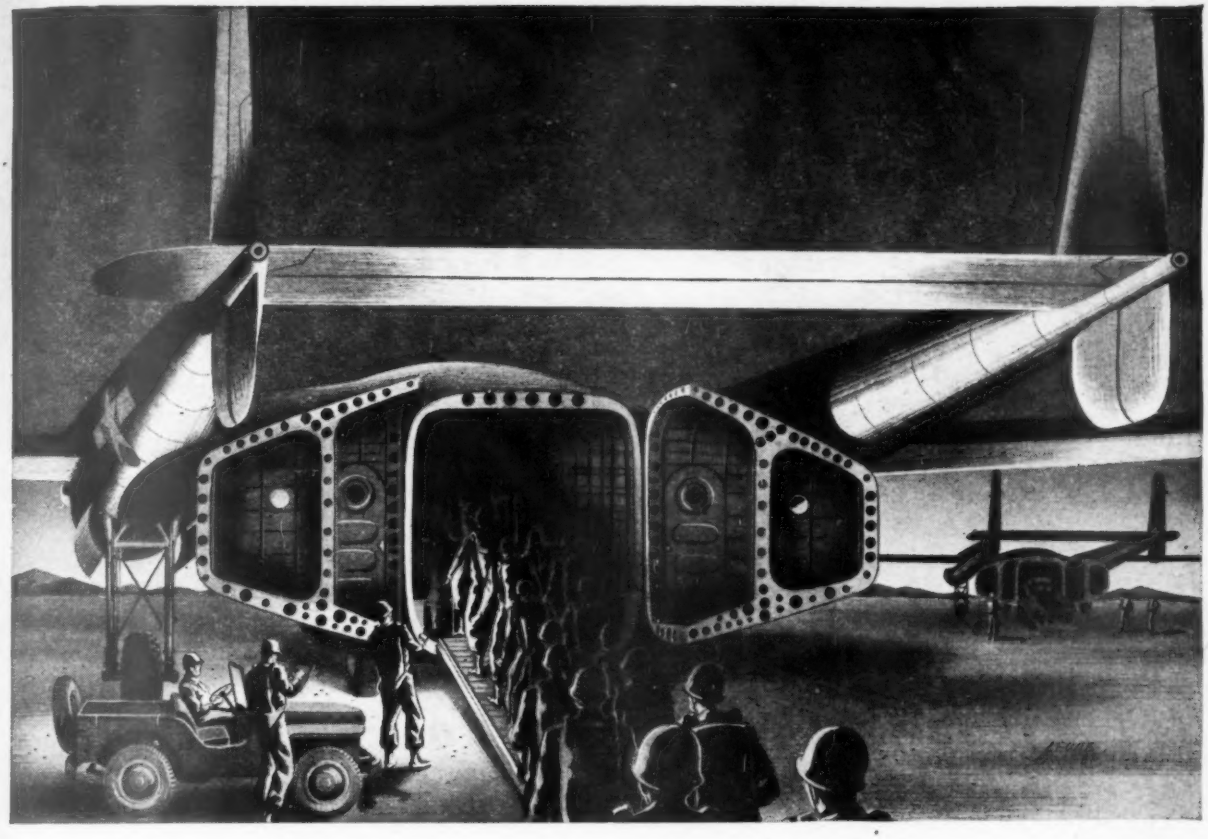

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get a feeling something like a sailplane pilot gets when flying into a head wind. It would be easy to fly backwards in a *Chief* in a 45 m.p.h. wind.

To check its cruising speed, I flew the *Chief* both ways over a nine-mile measured course. Average ground speed for the round trip was just over 85 m.p.h.; the flight was made at 2,000 feet above sea level at cruising (2,150) r.p.m.

Maneuverability in the air is excellent, and the *Chief* is easily trimmed for cross-country flight. The elevator trim-tab handle is directly over the pilot's head; it has a screw knob with which the pilot can loosen or tighten the tab handle at will.

One of the *Chief's* worst faults—and this is true of almost all similar high-wing monoplanes—is its lack of visibility. The pilot sits well back in the cabin and has good visibility straight ahead in level flight, but that's where it ends. I could see out the side windows by stooping, but *that* visibility is passable only in level flight. When making turns in an airport traffic pattern, for instance, the *Chief* gave me a few things to worry about. That this lack of perfect visibility is not inherent in the conventional high-wing monoplane design so popular nowadays is proved, ironically enough, by the results obtained in the *Chief's* sister plane, the *Champion*. This 65-h.p. tandem high-wing trainer is designed along almost the identical lines of the *Chief*, except that its all-around visibility is nearly 100 per cent better. The *Champion's* tandem cockpit hangs well down below the wing, and there is plenty of window area all around. The windshield is unusually deep. The *Champion* has about the best overall visibility of any similar airplane I've seen.

Some of this necessary visibility could and should be designed into the *Chief*. Perhaps a side-by-side version of the *Champion* would be slower because of the deep cockpit. But at the present time both the power and performance of the *Champion* and *Chief* are identical; many assemblies and parts on the two airplanes are interchangeable. I ferried a new *Champion* from the Aeronca factory to Chicago and must admit that I would sacrifice the *Chief's* comfort and quiet for some of the *Champion's* features.

**AERONCA CHIEF**

Approved Type Certificate No. 761

| | |
|---|---|
| Engine | 65-h.p. Continental |
| Wing span | 36 ft. |
| Length | 20 ft. 10 in. |
| Height | 9 ft. 1 in. |
| Gross weight | 1,250 lbs. |
| Empty weight | 725 lbs. |
| Top speed | 100 m.p.h. |
| Cruising speed | 90 m.p.h. |
| Landing speed | 38 m.p.h. |
| Maximum range | 420 miles |
| Service ceiling | 10,000 ft. |
| Fuel capacity | 23 gallons |

Source: Aeronca Aircraft Corporation

For control and safety, the *Chief* is one of the easiest lightplanes to land and handle on the ground. It has excellent stability at low speeds, and settles nicely and firmly onto the ground at just under 40 m.p.h.—which means you could put this airplane down almost anywhere if you had to. Once on the ground you have excellent oleo shock struts, brakes and a steerable tail wheel. The *Chief* is just as trick-free on the ground as it is in the air. The brakes, incidentally, are going to be changed. Current models have heel brakes, which are difficult to operate. Toe brakes will be standard soon. The parking brake, amazingly enough, is patterned after the standard automobile pistol-grip handle—a refreshing innovation after some of the bizarre parking brakes on current lightplanes.

Getting into the *Chief's* cabin is not the easiest part of flying this airplane. The cabin floor is fairly high above the ground and a man has to do a bit of squirming and climbing to make it. But for a woman wearing a skirt, well, she'll have her hands full trying to "preserve her feminine dignity." If the *Chief* had a small step between the ground and cabin floor, it would make entering and exiting much easier.

The *Chief's* mechanical starter is interesting. It is very light and consists of a crank handle on the left side of the cabin, a cable from the handle to a ratchet which, in turn, pulls on a gear-like wheel attached to the crankshaft just behind the propeller. To start the engine, the pilot turns the ignition switch to the


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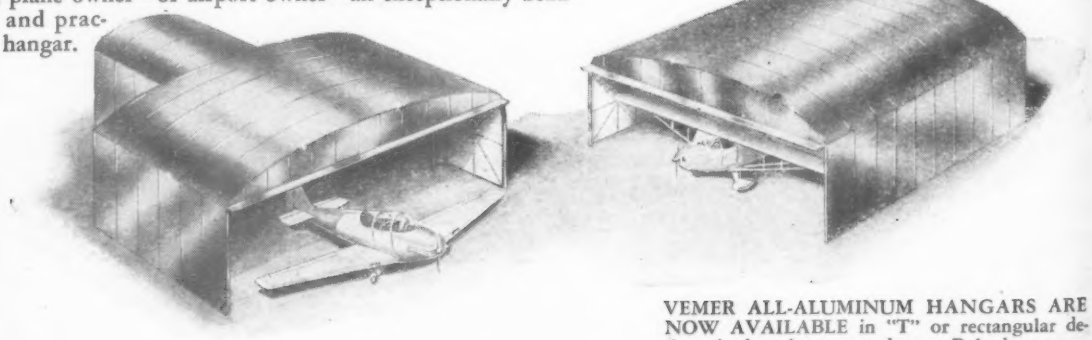

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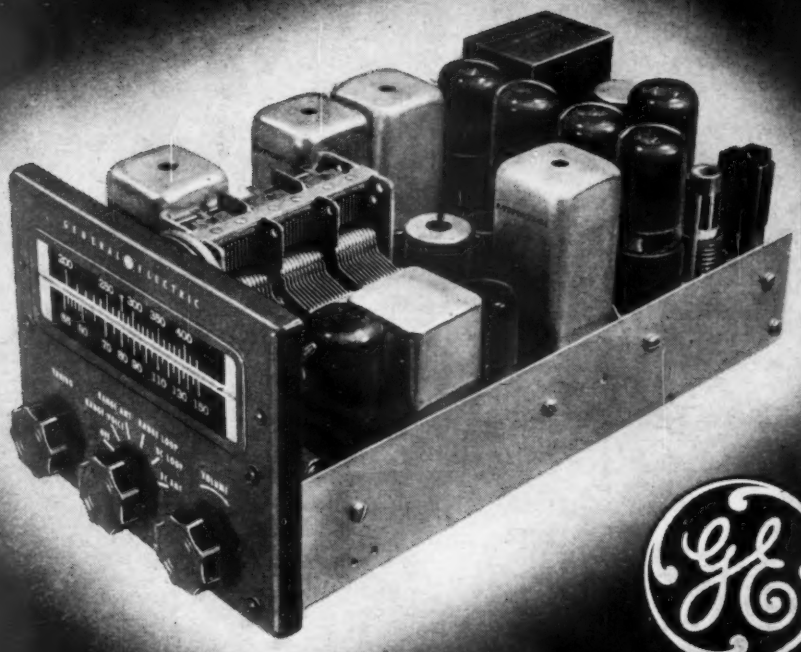

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left magneto from which the starting impulse comes. Then the pilot simply pulls the starter crank back as many times as it is necessary to snap the propeller over and start the engine.

This starter is cheap, light and quite satisfactory. But it does have one drawback: it is easy for the pilot to forget to switch his ignition key over to "both" once he starts the engine on the left magneto. Of course, he'll have to overlook running up his engine at the end of the runway before take-off, but that sort of thing is done frequently. With the *Chief*, the result is that the pilot will probably take off on one magneto, at reduced r.p.m.

The *Chief's* cabin and "interior decorations" are above average. Seats, upholstery and instrument panel are very attractive to the eye. So is the whole airplane, for that matter. The prospective buyer should take pains to see the *Chief* if he is in the market for that type of airplane.

—MAX KARANT

## 15 YEARS AGO

FROM the December, 1931, issue of this magazine:

Junkers in Berlin announced development of an airplane for flights into the stratosphere 10 miles above the earth.

Seven Boeing all-metal bombers had been delivered to the AAF at a cost of nearly $700,000. Each plane could carry a crew of five men and two 1,000-pound bombs. Design innovations were an unusually long thin fuselage and exceedingly thick wings.

Germany had demonstrated a plane with large dorsal stabilizing fins, called the "turkey," whose construction permitted a take-off at a 60° angle. The plane also introduced a device which prevented it from falling into a nose dive should the pilot lose control.

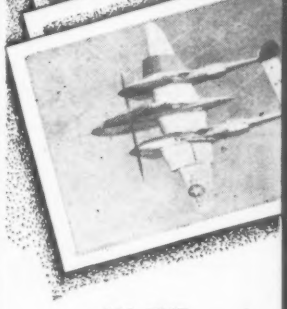
Christened the *American Clipper*, the Sikorsky S-40, "world's largest amphibian," had successfully completed its trial flight over the Atlantic. With a maximum gross weight of 17 tons, the plane left the water in 19 seconds and maintained a cruising speed of 110 m.p.h. Landing speed was under 60 m.p.h.

An unofficial world's glider record for sustained flight was established when Lieut. John C. Crain, Air Corps Reserve, landed after 16 hr. 38 min. in the air. He maintained an average altitude of 3,000 feet during the flight.

Aerial pickup devices which permitted a plane to take on sacks of mail or other articles while in flight were successfully demonstrated at the Washington, D. C., airport. They were invented by Godfrey Cabot, formerly president of National Aeronautic Association, and A. W. Card, a World War veteran.

Twentieth anniversary of the first air mail flight was celebrated at Roosevelt Field, N. Y. In September, 1911, Earle Ovington piloted a Bleriot monoplane, powered with a 70-h.p. Indian rotary engine, from Garden City, L. I. to Mineola and dropped a bag containing 640 letters and 1,280 post cards.


# REAL PHOTOS



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# The Flying Clerks of Phoenix

(*Continued from page 58*)

plane in the air." Ernie Brewer did some figuring and guessed this would be about $2 an hour.

By-laws were established, limiting membership to 18 and requiring a $10 initiation fee. This has been used to pay insurance, service and inspection costs. There also are $5 monthly dues which entitle the member to 2½ hours of flying and are an assurance that each will fly at least that much each month. All other flying is at the $2 hourly rate.

The Goldwaters and Brewer wanted to develop as many licensed pilots as possible, so a rule was established which required a member to drop out and make way for another as soon as he received his private license.

In late February, Ernie Brewer hopped a train to Middletown, O., and flew back a spanking new Aeronca *Champion*, for which the Goldwaters paid $2,295. He arrived at Sky Harbor Airport in Phoenix on March 1. Since then the little plane has had few moments of rest.

There was a waiting list when memberships were first opened, so the 18 charter memberships were quickly filled. Since then six people have dropped out for one reason or another but their places have been taken up immediately by others. There is still a waiting list.

The log of the Aeronca shows that 77 hr. 55 min. were accumulated in March, 67:55 in April, 120:50 in May, 78:35 in June—345 hr. 15 min. for the first four months of operation. Most flying is done in the mornings before store opening at 10 a.m., in evenings after closing, and, of course, on weekends.

So far every club member has had flight instruction, nine have soloed and two have completed successfully all requirements for private licenses. More should have their licenses by the time this article hits the presses.

A look at some typical members will give you an idea that this club is a true cross section of the people who are flying today.

Jo Ann Snell, featured in this article, started with Goldwater's on January 11, 1944. She sells to teen-agers in the store's "Young Arizona Shop," although at 21 she is scarcely out of teens herself. She soloed in June and is well on her way to a private license.

Larry Kahley, on the other hand, is 30—a veteran of the Coast Guard in World War II. He is a salesman in the men's department. Starting with the store in 1937 he went away to war and returned to his old job in December, 1945. He was one of the first of the group to win a private ticket.

Another who has a private license now is Dorothy Neal. She has been with Goldwater's since the first of this year only and began her instruction on March 16. She soloed on May 29 after 8 hr. 5 min. of instruction and received her private license after 32 hr. 15 min. of solo flight.

Then there is tiny Margaret Swaim,

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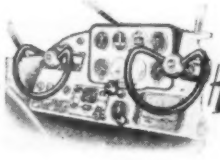

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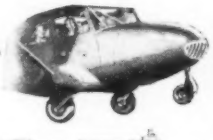

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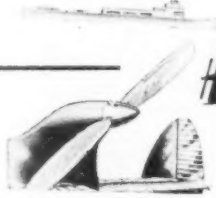

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saleswoman in the toiletries department. She began flying on May 24 and soloed exactly one month later after she had rung up 9 hr. 45 min. of instruction. She is 22.

When flying proficiency has developed there are two advanced airplanes for the use of club members. One is a 225-h.p. Waco, the other a 185-h.p. Stearman.

It isn't everyone who gets a chance at a private license for around $100. And after they are licensed and leave the club the store provides them the chance of flying the Waco or Stearman for the actual cost of operation only.

What do the Goldwaters gain? As pilots, they know this is an air age. They feel that the best way to foster airmindedness among employees is to "put some air between them and the ground." They feel, too, that an outlay of $2,295 for the Aeronca and about $90 monthly for the instructors is a cheap way to solidify employee relations. But more than that, they know what individual flying costs and that that cost is often more than average purses can bear. In offering one more service to their employees, they are only following the trend which they initiated in establishing the Victory Farm and their cabin at Prescott. END

## The GOLDFISH CLUB

The Goldfish Club was formed in order to give recognition to the thousands of pilots and aircrewmen who have ditched their aircraft or bailed out at sea and have saved their lives through the use of life jackets or dinghies. Army, Navy and Civil Air Patrol personnel are eligible for membership. To apply, the following information should be submitted to the American Secretary, Max Karant, Managing Editor, FLYING, 185 North Wabash Avenue, Chicago 1, Illinois:

1. Name, rank and serial number
2. Service address
3. Home address
4. Date and location of incident
5. Description of incident
6. Signature of applicant
7. Signature of commanding officer

A listing of the Club members, a regular feature in preceding issues, is continued below:

321. Worobey, Abraham, A
322. Ward, Guy J., A
323. Hill, David H., A
324. VerHoven, George M., A
325. Barry, James L., A
326. Elliott, Billy W., A
327. Huntington, Ralph S., A
328. Haase, R. A., N
329. Musser, G. E., N
330. Jones, J. W., N
331. MacIntre, J. E., N
332. Sikora, S. J., N
333. Lightfoot, J. W., N
334. Wentworth, L. I., N
335. Hannaman, L. R., N
336. Bondurant, Thomas Graham, N
337. Simons, Samuel S., N
338. Jackson, Howard Grant, N
339. Sims, Benjamin S., N
340. Holloway, John C., Jr., N
341. Klimko, Andrew A., A
342. Philpitt, Marshall S., A
343. Munday, Herbert A., A
344. O'Brien, Hugh P., A
345. Porter, Gordon E., A

A—Army; N—Navy.


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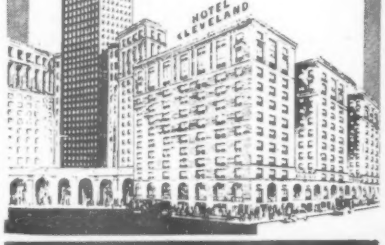


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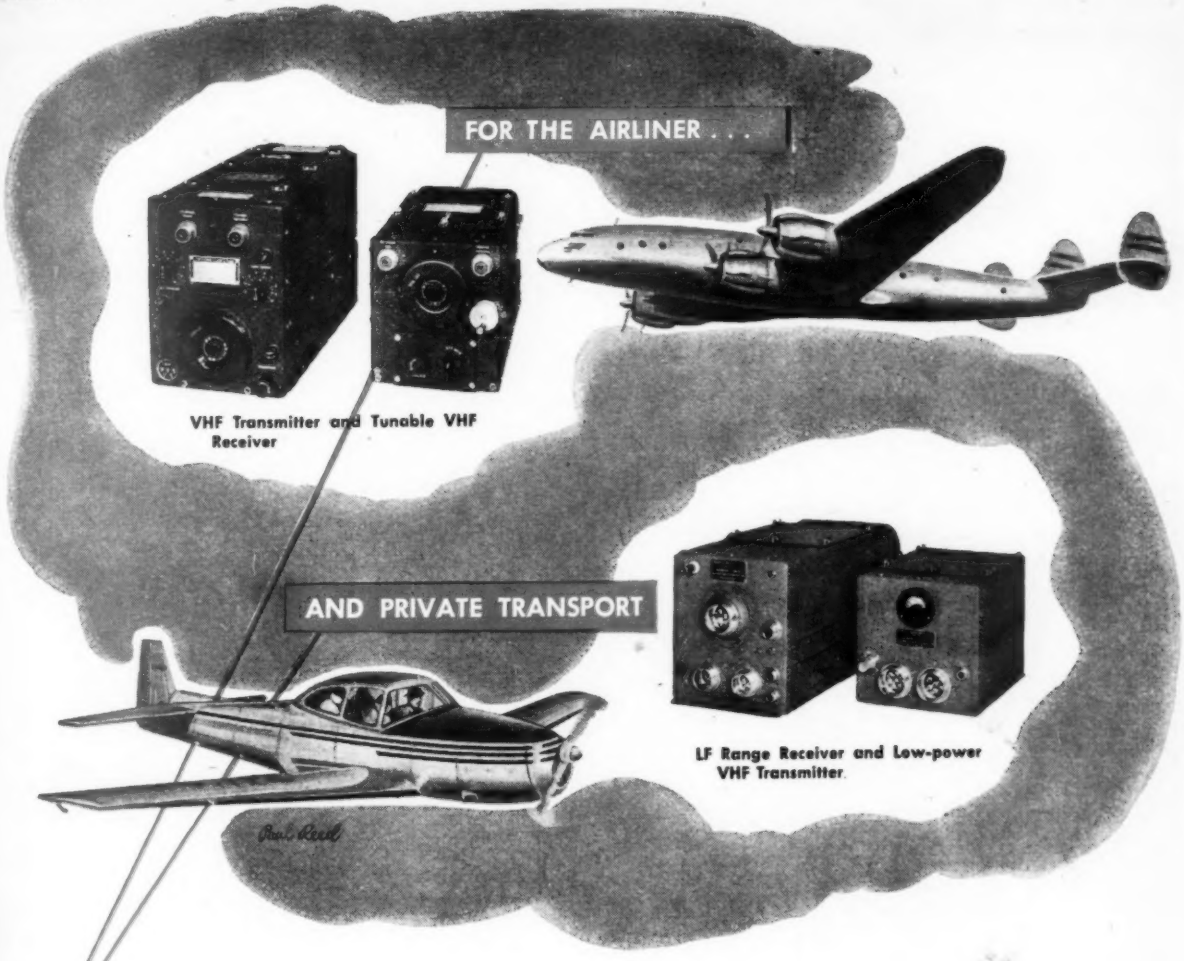
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# Planning the Flight

(*Continued from page 60*)

field nearby). A coded beacon flashes Morse code figures denoting a number representing the distance of the beacon from the origin of the airway. It is not necessary to learn this figure code, because the numbers are printed on the map with the dots and dashes. Flashing beacons, with or without code, do not revolve.

Unfortunately, there are many flashes of light at night. The careful pilot counts the flashes, identifies the code beacons, and knows his azimuth. In that way he avoids flying on an adjoining airway or to a commercial beacon not on the airway.

*Miscellaneous:* Concluding with our map, we find data for pilots that is a real help in pin-pointing: steeples, racetracks, round-houses, underpasses, overpasses, water tanks, and other salient identifying marks: danger areas, radio towers, and caution areas; longitude and latitude, from which one may measure nautical miles direct (one degree of latitude, measured up and down on the longitude line, equals 60 miles on *any* map. One minute equals one mile). Isogonic lines of equal magnetic variation help you to determine your *true* compass heading; they number the degrees of variation in the locality covered by the line.

Now we come to the point where the average pilot takes off. Let's not do it. What if an airport along the route has been closed or no fuel is available and we arrive there after dark, out of gas and out of luck? Let's check first with the *Airman's Guide* and the *Flight Information Manual*, both published by the Department of Commerce.

*The Airman's Guide* (formerly called the Bi-Weekly Notices to Airmen) is published every other week and contains Notices to Airmen, air navigation radio aids, danger areas and a directory of airport locations and elevations.

The *Flight Information Manual* also contains an index of airports, a frequency and call-letters list of standard commercial broadcasting stations, Coast Guard direction finding services information and an explanation of instrument approach procedures.

The use of *Airman's Guide* before a take-off is a *must!* Here you will find much pertinent data concerning your flight, the territory over which you will fly and information concerning the radio ranges and the fields which you will encounter. It is actually possible to fly from coast to coast with only a radio and the latest copy of this publication as your guide.

With the *Flight Information Guide* handy, you can quickly look up the frequency of broadcast stations on which to home with your loop antenna, or—if you become badly lost—the procedure and method of calling a Coast Guard station for a bearing. The Coast Guard can locate your position by tracing your radio call and pin-point your location on the map. As for instrument approach procedures, this tells how to make an ap-

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Now, and not before, you are ready for that cross-country flight. END

## I Learned About . . .

(*Continued from page* 104)

climbing. I opened the throttle more and held the stick back a little harder to bring the airspeed down to 140, the plane's best climbing speed. Suddenly, I noticed the altimeter had stopped climbing. The engine began to labor and I had the feeling I was hanging in space. I looked at the airspeed indicator but it still read 160 m.p.h. I couldn't understand the sensation . . . I couldn't be stalling with that much airspeed!

The engine became extremely rough, then suddenly quit. I frantically slammed the control stick full forward and then felt it go slack in my hand. The rudder, too, was limp. My feet fell off the pedals upward and my belt pressed hard against my lap. I was upside down—in a position in which the engine couldn't possibly run!

A dark green indefinite object appeared hazily in the clouds through the glass top of the canopy. I focused my eyes and saw rows of square hedges bordering on a quiet country lane and a railroad track with a tiny toy train puffing along. The view slipped and swirled crazily across to one side and was gone. Then came the spin—I knew the eerie sensation well. Only 3,000 feet to the ground—no artificial horizon, and an airspeed which stayed at 160. I knew I couldn't bring the plane out in time to prevent hitting the earth. I let go the controls and slid the canopy open. My only chance was to jump.

I grabbed for the harness release ring with my heavily gloved hand and couldn't get hold of it. I tried again and again, clawing desperately, but the wide fingers wouldn't fit into the small ring. I cast a quick look at the altimeter—1,500 feet—not much time left. I had to do something and do it quick!

I finally gained enough control of myself to realize I had to pull off my ill-gotten gloves in order to release the harness ring. With a violent jerk I had the right glove off and was just putting my uncovered fingers into the ring when the engine started with a roar and I was forced back into my seat. Involuntarily, I grabbed the control stick and pushed it forward, thinking to keep the plane from


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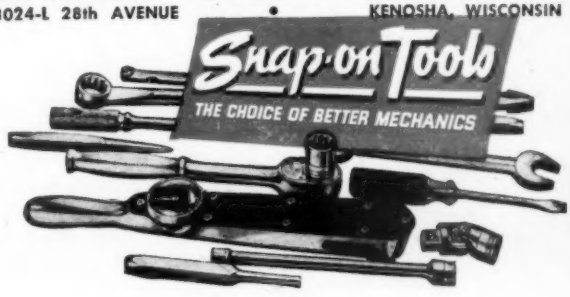

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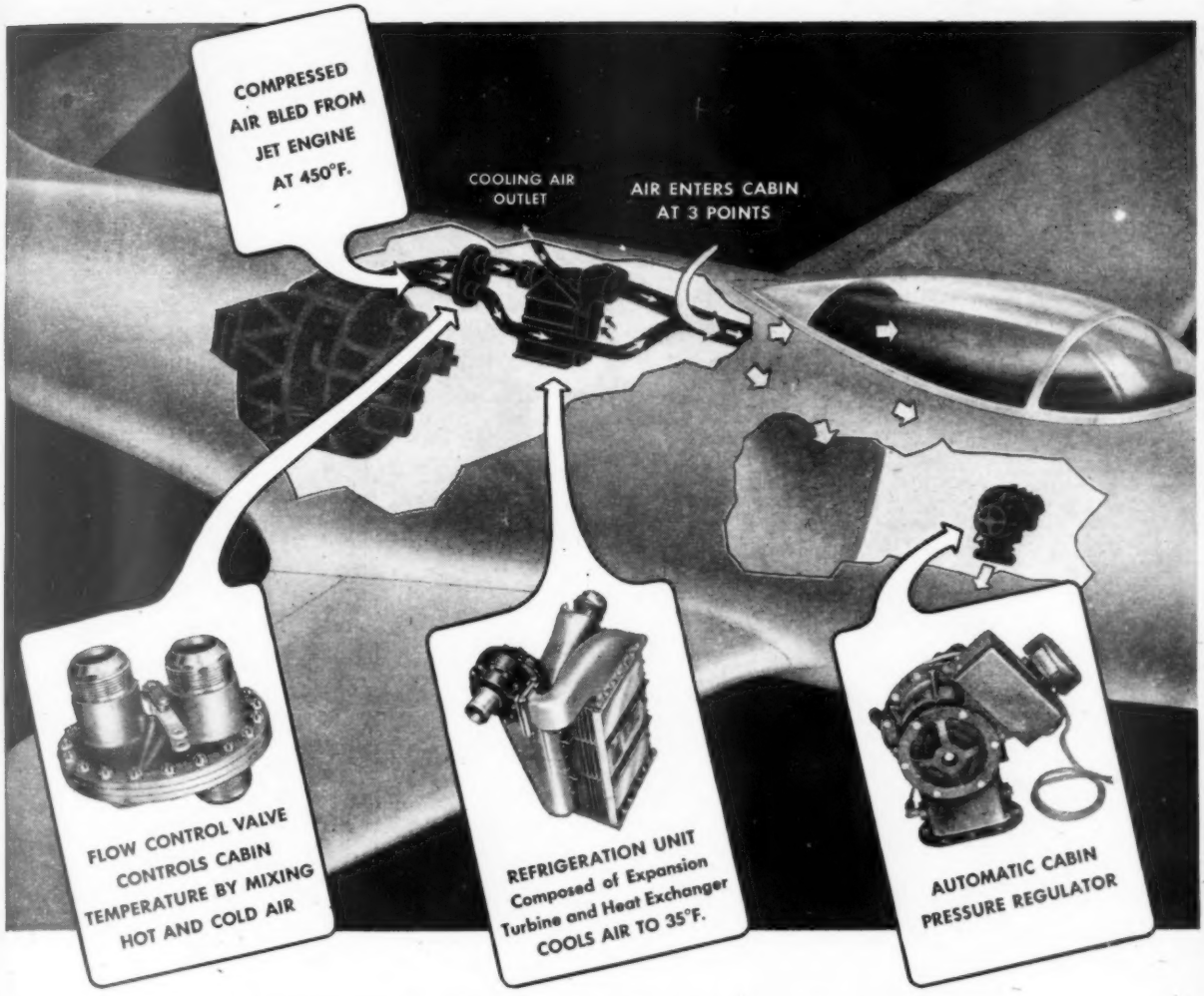
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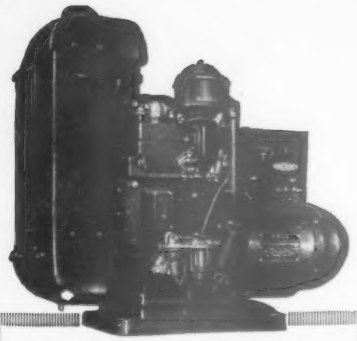

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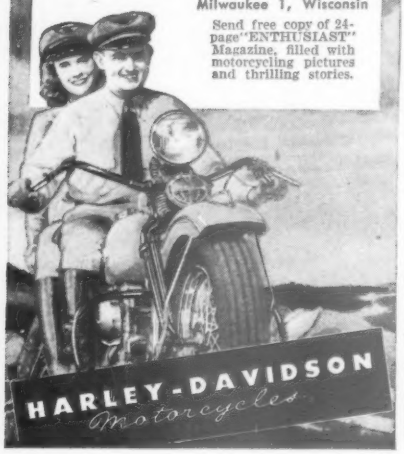



tightening into the spin by nosing it down.

Suddenly the ground appeared squarely in the front panel of my windshield. I closed the throttle automatically and eased gingerly back on the stick for the speed in the dive was getting extremely high. It was too late to jump now. I had to ride it down.

As I cautiously brought up the nose, the centrifugal force of the pull-out made my cheeks sag and my vision grow dim and fuzzy. The ground, green and deceivingly soft in appearance, rushed up ever faster. I was sure I couldn't make it, and I opened the throttle wide to induce the nose to rise more quickly.

It worked. In a screaming, ear-splitting pull-out, I leveled off across a grain field below the tops of the surrounding trees with the airspeed indicator still stuck at 160.

Just beyond I could see the ragged white surf line of the beach. "Wow," what a close one," I said aloud. Then thought, "What a headline that would have made at home. 'Walcott killed in a *Hurricane,*' when everyone knows they don't have hurricanes in England." I couldn't resist the pun, and it made me feel much better.

I pulled the canopy over and started to replace my right glove, but stopped instead and jammed it back into my pocket. I didn't care to wear it again!

I realized I had used poor judgment in taking off in such bad weather regardless of how urgent I had thought the mission. Further, when the artificial horizon was found to be out, I should have turned back under the clouds and not attempted to go up through them.

The failure of the airspeed indicator was not my fault but was probably caused by an insect ramming into the pitot tube while flying at low altitude. However, it happened at a moment when everything else was stacked against me.

Years have passed since. Years of combat flying, prison camps, sweat and blood, but this is one incident that I have never forgotten. END

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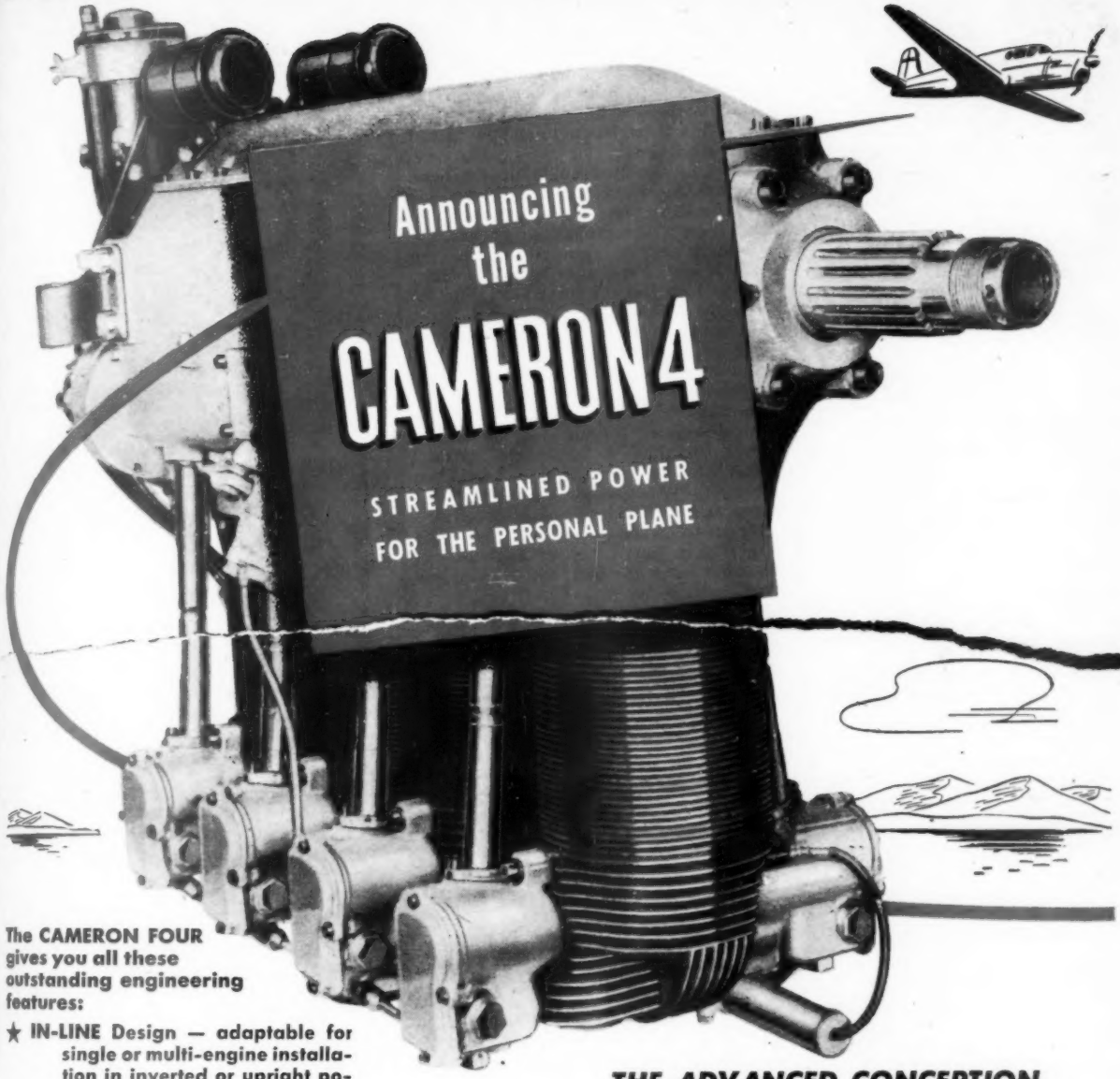


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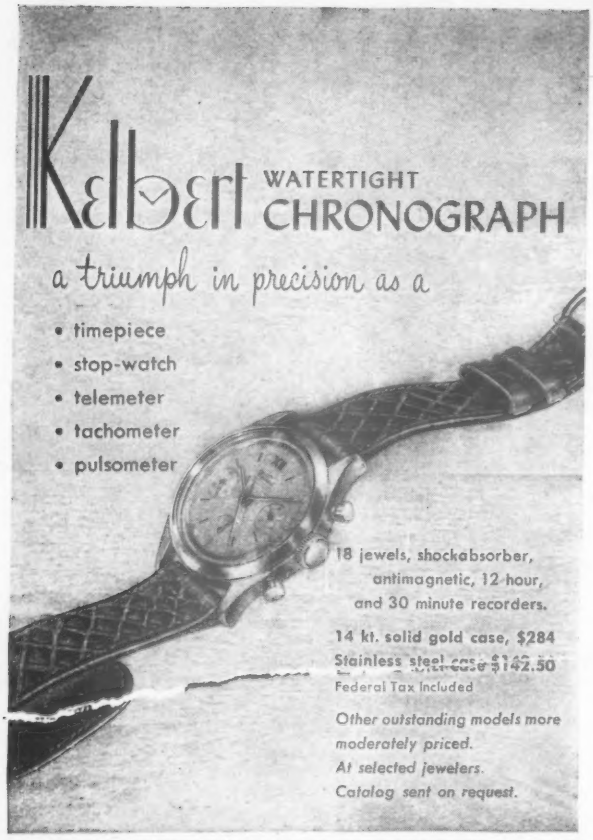

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# Oyster Patrol

(*Continued from page* 61)

crew of three plus operating expenses of a boat for two days.

When the oyster patrol boat burned, Robert P. Walker, an ex-AAF pilot, went to Vern Hayes, manager of the Haines Oyster Co. of South Bend, Wash., and laid his qualifications on Hayes' desk:

"I know the oyster industry—how beds are identified by buoys, flags and stakes. I know Willapa Bay and Grays Harbor through previous work for the Washington State Fishery Department. I can fly over the oyster beds daily and patrol more effectively and inexpensively than can be done by boat."

Walker got the contract to fly the daily patrol, and immediately put in an order for a Globe *Swift*.

Walker's own airport at Ilwaco is just north of the mouth of the Columbia River—the southern terminus of his daily patrol. Northward, along the Pacific Ocean side of the peninsula, is Long Beach—28 miles of straight and level sand. On the inland side of Long Beach Peninsula is Willapa Bay. Just a few miles north of this large and shallow bay is the bar that saltwater men cross to get into Grays Harbor. It is over this scenic country, from the Columbia to the Pacific, over bays, inlets and harbors with the majestic Olympic Mountains towering in the background, that Walker flies.

Walker explained that he does not follow a definite schedule. "Just as long as I fly over the oyster beds daily, I'm doing my job. Actually, the purpose of this patrol is more to prevent oyster pirating than actually to apprehend trespassers. And so I don't follow a schedule—but fly whenever I feel like it."

Walker's plane is equipped with two-way radio for direct communication with the office of the Haines Oyster Company, binoculars, and with a movie camera fitted with telephoto lens so that identity of trespassers can be a matter of positive record. Haines Oyster Company dredges have ship-to-shore radio equipment and Walker's radio reports are picked up by the company's listening watch.

"Oyster pirating used to be quite a business around here," Walker said. "Sometimes it was outright poaching; other times dredgers or hand pickers cleaned out oyster crops that belonged to another firm by error. Tide land is ever-changing. Sometimes tides or storms wash out boundary markers and, since many of the beds look about the same, mistakes in harvesting a neighbor's oyster crop have occurred."

In addition to his pre-war and wartime flying experience, Walker is otherwise qualified for the oyster-bed patrol work. Before the war he was employed by a Washington firm of oyster growers and studied oyster propagation under the tutorage of Dr. Juzo Hori of the University of Yokohama, Japan, who was in the country on a research project for American oyster culture interests. He was teaching Americans how to raise Japanese oysters in U.S. Pacific waters warmed by the Japanese current.

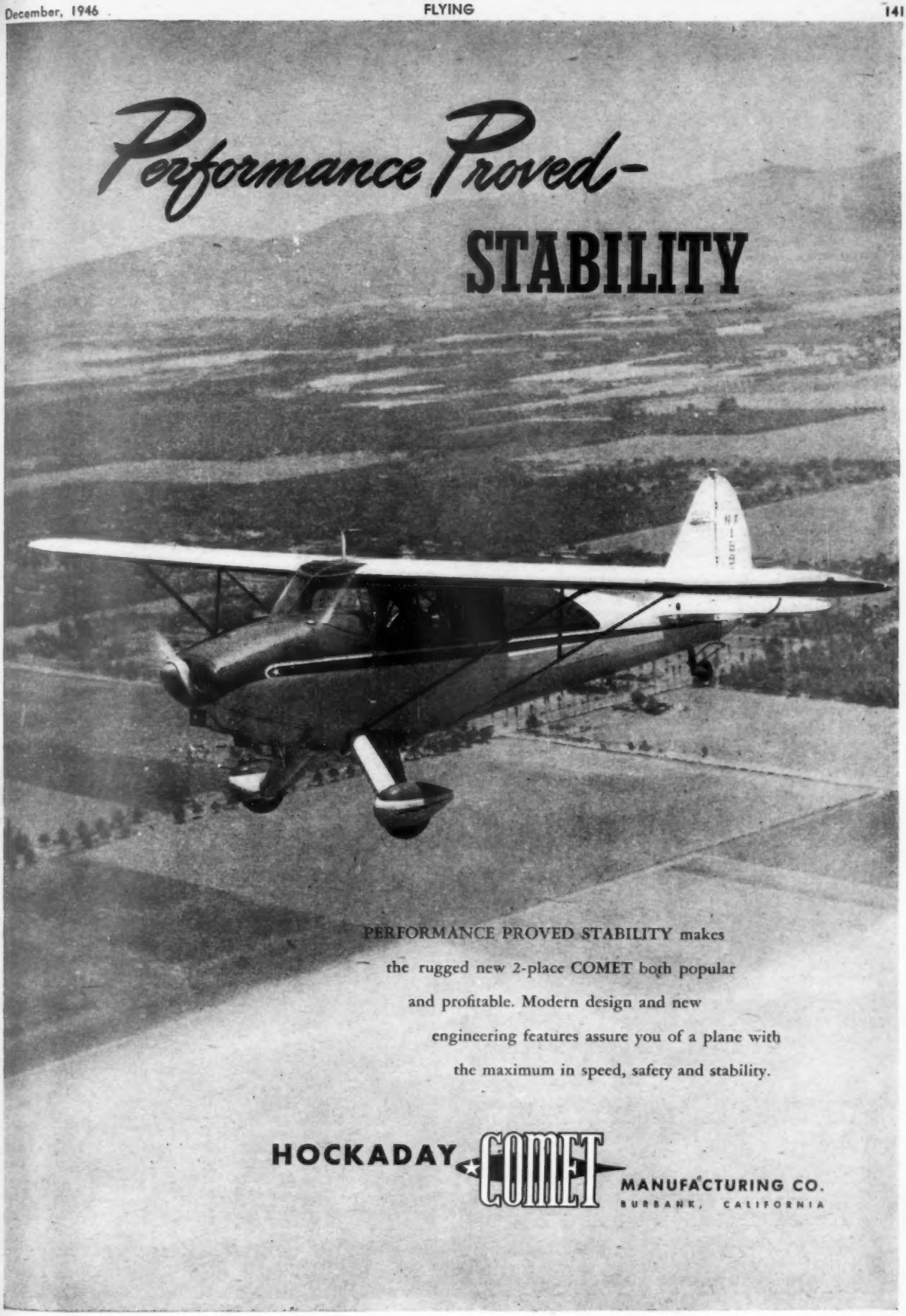
"See those stakes?" asked Walker one day after taking off with the writer for a patrol flight. "All of those brown areas are oyster beds." The tide was out and from 1,000 feet individual beds of oysters could be picked out just as land crops stand out like patches of a quilt.

Cruising back and forth over wide Willapa Bay, Walker pointed out several of the dozen rivers and streams that empty into the Pacific through that bay. The rivers had carved waterways through the tide flats. The oyster beds are on the higher portions of these tide flats. "Oysters can't take fresh water," Walker exclaimed. "Clams can live all right, but when an oyster embryo is hit by fresh water it drops down into the mud and dies." Walker explained that oysters attach themselves to a stick, piling or stone where they grow to palatable size.

He dropped down over a dredge and then climbed back up to 1,000 feet after identifying the crew. "The Haines Oyster Co.—that's the biggest outfit operating here—is going to paint black and yellow markings on the decks of their dredges so that they'll be easy to identify from the air."

The one dredge was the only sign of activity in the oyster beds. Walker explained that while oysters are harvested the year round there is little activity during the summer—the spawning season of oysters.

After an uneventful cruise over Willapa Bay, Walker swung north and climbed a little to have safe clearance over a foothill

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ridge of the Olympics that forms a point into the Pacific and separates Willapa Bay and Grays Harbor.

Two small fishing boats were riding the swells marking the bar that cuts Gray's Harbor off from the open sea. "Crab boats," Walker explained. "They go out and drop baited nets."

A portion of the southern part and practically all of the northern part of the 120 square miles of Grays Harbor is private oyster land. Satisfied that no oyster harvesting was going on, Walker swung inland towards Hoquiam and landed at Moon Island Airport.

After a 15-minute session with the coffee pot, the flying patrolman was ready to head back for the Long Beach Peninsula. This time he cut west of the point separating Grays Harbor and Willapa Bay and flew down the coast. Nearing Long Beach he throttled back and dropped the *Swift* to 500 feet over the natural roadway. "Always a crosswind from the ocean, but this is the best runway I've ever seen. Can't use it except in emergency, however, because the state highway department has designated the beach as a highway."

Then with a grin, Walker said, "Watch carefully now. We're coming to the only excitement there is in flying this patrol. There's an isolated spot on the beach here that girls use when they want to get brown all over."

A minute later he had the *Swift* in a steep bank and was winging around four girls who were frantically dragging on clothes.

Walker pulled out of his bank and, with a salute wave of his wingtips, headed for Ilwaco. A few minutes later he put down smoothly onto the home runway.

"Leaders of the industry considered using a plane to patrol the beds some time ago," Walker said after taxiing the *Swift* up to the hangar and cutting the switch. "It certainly wasn't hard to sell them on the idea after the patrol boat explosion."

Walker isn't confining his aviation activities to oyster bed patrolling. He takes passengers up over the scenic country, particularly during the summer months when the area is crowded with tourists and vacationists. He also has lined up a number of prospective flight students and plans to begin operation of a school in the near future. END


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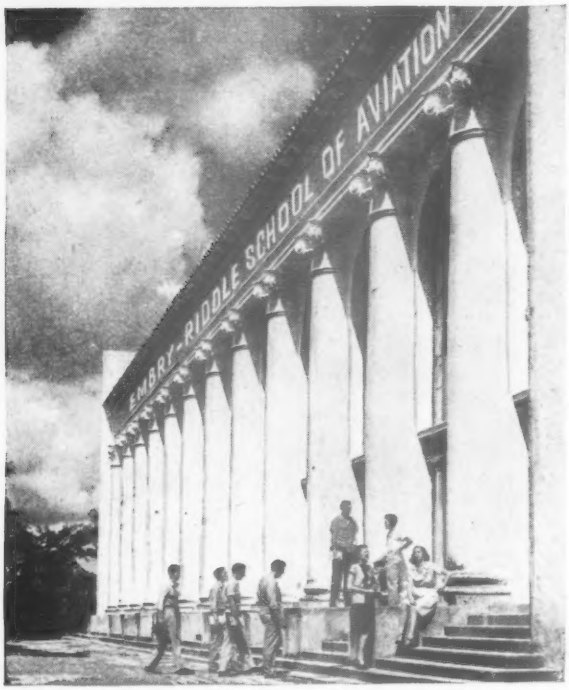


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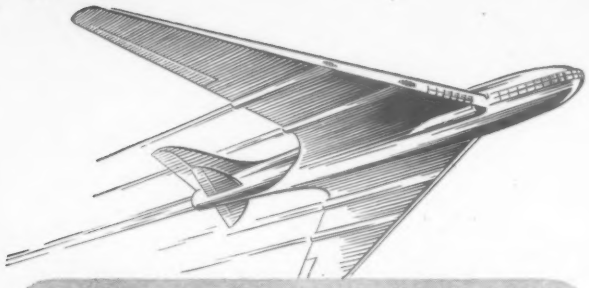

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# London Letter

(*Continued from page* 103)

once per second. It sounds like an excellent device.

Recently many schemes have been proposed for providing information about traffic movement on runways and perimeter tracks to the control officer, but it seems probable that some version of ASMI will in the end prove the most suitable proposal of all.

## Chrislea Ace

First flights of the Chrislea *Ace* have been somewhat delayed, but the machine is complete and is likely to have made its first series of test flights long before these words appear.

The *Ace* bristles with interesting features, being a parasol monoplane with tricycle landing gear. The engine of the prototype is a Lycoming, (four-cylinder, horizontally opposed) and this shape of engine fits the design. It is hoped eventually to change over to the British Monaco engine.

The chief point about which information is still awaited is the effectiveness of the novel control system. This has been explained before but is a little difficult to grasp. The flying controls are all concentrated on a hand wheel but this wheel is mounted in a different manner from the hand wheels of the conventional aircraft.

It is on a shaft which springs from a universal joint on the other side of the dash. The wheel can be lifted bodily or lowered or it can be moved over to the left hand side of the cockpit or to the right. It can also be turned.

The ailerons are worked by turning the wheel, the elevator by lifting it or lowering it, and the rudder by moving it over bodily to right or left. The pilot is given full power to work any control separately without using his feet.

Another ingenious feature is an accelerator pedal. This is related to the hand throttle in the *Ace* just as the accelerator pedal of an automobile is related to the hand throttle on the dash. The hand throttle sets the opening and the pedal is used as an accelerator. The idea in the aircraft is to provide the pilot with a means of opening up his engine if, for example, he makes a short approach, without having to remove either hand from the wheel.

## Continental Personal Aircraft

France's move in producing cheap light aircraft for European use has been followed by Czechoslovakia, Sweden and Holland. The Czechoslovakian machine is to be known as the *Falcon* in English speaking countries and is a pleasing little aircraft of the conventional low wing pattern with retractable landing gear. Span is 33 feet, length 23 feet 4 inches and empty weight 880 pounds. Maximum speed is 151 m.p.h. and range is 650 miles. The makers are the Mraz Aircraft Construction Company of Chocen.

Another light aircraft is being produced by Fokker and yet a third by a Swedish company, the last to be known as the *Safir*. Tricycle landing gears are making progress on the continent but continental designers are likely to score most in cheapness. They have planned many aircraft which should be salable at a low price.

But one hears of the same sort of difficulties about engines that we are experiencing in England. In this field the French may make good progress for they have some admirable engine designs if they could complete sufficient development work upon them.

## Tangentials Again

The Heathrow controversy continues. Lord Winster, continuing to praise Heathrow as one of the finest airports in the world, has named it "The London Airport." But soon after, in the House of Lords, Lord Swinton, first British Minister of Civil Aviation, following the lead of Lord Sempill, questioned the pattern of the runways.

At Heathrow the runway pattern is triangular and fresh runways are to be added parallel. Critics point out that the tangential pattern gives a greater traffic capacity with higher safety.

Lord Swinton has now asked the names of the committee which advised the present minister to stick to triangular, RAF-type, runways. And he has asked that some details of their reasoning, with appropriate charts, be published. END

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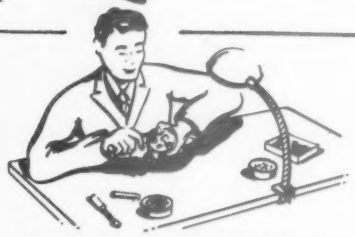

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# Report from Washington

(*Continued from page 99*)

in sea-going warfare, was doing about the flying machine. We found that of the 10 top men running the college, only two are pilots, Capt. Fred C. Dickey and Capt. Gail Morgan. Morgan is a first-line working pilot who has been flying since 1921, grew up with the Navy Bureau of Aeronautics, and among other duties was executive officer of the carrier *Saratoga*. But on the list of the 10 top executives at the War College he is down as secretary, No. 10 and Dickey is the No. 9 man.

The other eight—not one of whom is a pilot and many of whom are dyed-in-the-wool battleship boys—are Adm. Raymond A. Spruance, president; Rear Adm. Allan E. Smith, chief of staff; and Comms. Randall E. Dees and Penn L. Carroll, and Capts. Thomas E. Shock, Chapman C. Todd, Jr., Scott Ulmsted, and Einar R. Johnson. . . .

## Biggest Boom

Regardless of internecine wars, passenger bleats, airmail recessions, and the mine-run of difficulties connected with the business, the Air Transport Association reports that, when the score is in, 1946 will prove to be not bad, not bad at all for the airlines. Best year in history, as a matter of fact. Estimates in the domestic field are that the number of passengers flown will go to 11,000,000 or better, miles flown to better than 300,000,000, revenue passenger miles to better than 5,000,000,000. Ton miles of express and freight flown will be upward of 31,000,000. . . .

Airmail, off some 45 per cent during the first six months of the year, got a shot in the arm when the five-cent rate came in October, but it will not be enough to offset the early losses. These were largely owing to decline in soldier airmail loads. This is saying nothing about the new transport bonanza—foreign routes.

With State Department still jockeying on negotiations with other nations, figures have been obscured. Best ATA guess is that the number of passengers for the year will top the million mark, as contrasted with the 1941 figure of 320,000 and the 1945 top of 785,000. And next year is going to be a record-breaker, think the experts, especially abroad. Most optimistic estimate: 6,000,000 foreign air passengers in 1947, with corresponding jumps in airmail and freight traffic over the records for this year.

## Tourist Notes

Whenever you get to the point where you think the lightplane isn't the most wonderful invention since Eve, tune in on our favorite super-salesman of aviation, the unquenchable Col. John C. L. Adams, one-man lightplane pioneer who goes under the official and resounding title of Adams Enterprises in Spanish America, S. A. (Inc.). Last we talked with the colonel (he likes to reduce all his names and titles to a three-letter summary—"Tex") he was going to lead a lightplane expedition to South America that would darken the skies from here to Rio. Now we

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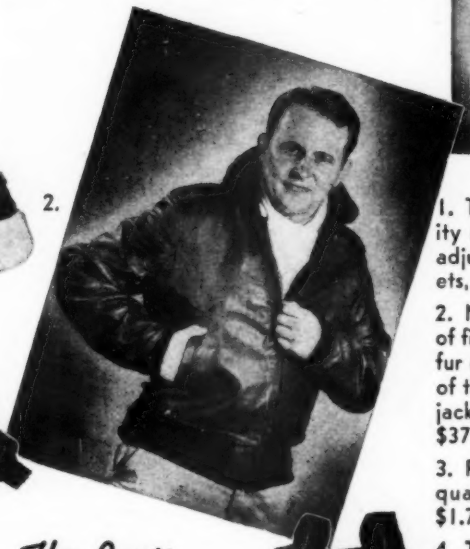

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receive from him a long report saying that he recently completed leading what he calls "The Inter-American Lightplane Cavalcade" from Lock Haven, Pa., to Panama City, Central America. Eleven Piper *Cub Trainers* and *Supercruisers* made up the cavalcade, whose "complete absence of accidents speaks well for the safety and all-weather characteristics of the route and for the experience and safety-control methods of the AESA (that's Tex), that have conducted numerous such trips and mass flights." Colonel Adams has flown it, with or without cavalcade, 33 times since 1939. He's planning another junket about February 1, and estimates round-trip, bring-your-own-plane cost at about $700 total for one, $885 for two. But—when you really get to talking business with Tex—"the trip can be done much cheaper."

### Engineering Futures

Speaking of inventions, concensus in the aviation industry seems to be that there is plenty of room for more. While most of the industry is busy at the moment filling back orders, everybody is keeping a weather eye out for—and expecting—startling innovations in the not distant future. Straw in the wind is a report, not from a starry-eyed aviation booster, but from a conservative stock exchange house, White, Weld & Co. They recently underwrote a report on aircraft manufacturing by George Bryant Woods. Among other things, Woods reported: "Out of 200 or more projected plane developments in the private plane field, at least some are likely to mature into outstanding new developments and successful business ventures. However, no one can predict whether the best of the new planes to be expected will be the products of the large military and transport producers, present private plane manufacturers, some unknown college professor, or possibly even some obscure but brilliant youth building his prototype plane at present in his father's barn." It would seem that even Wall Street is optimistic about the possibility of eventually creating the perfect air vehicle.

### New Frontier

Our other South American air enthusiast, Cloyce J. Tippett, CAA expert in Brazil, came along the other day in person to tell us how things were going down there. Seems things are booming, especially in the comparatively unknown and unexplored regions of central Brazil, an area roughly three times the size of Texas in which, preliminary investigation indicates, are rich deposits of gold, diamonds, and iron and vast stretches of rolling country and sub-tropical weather, ideal for ranching. Most distinctive aspect of the area is that it is being opened up almost entirely by airplane. Among the first to get in was one Major Basillo of the Brazilian Air Force, who made a grasshopper survey in a Fairchild "24," landing wherever he saw a good spot when he had to refuel from cans carried in the fuselage. When his gas was half gone, he'd start back. Navigating was by guess and by compass—maps of the area were found to be cockeyed. Today planes are shuttling back and forth from Rio and other points south, bringing in men, supplies, and mining equipment. Within a year, Tip predicts, pioneer settlers will be spreading out all over the place.

### Air-Minded

Flying comes naturally to Brazilians. In the back regions Tippett has met whole communities whose population has never seen a railroad and never ridden in an automobile, but who take the airplane as a matter of course. Great distances, rough terrain, lack of roads and railroads—all have combined to make Brazil one of the most airminded nations in the world. There are 16 native airlines. American transports and lightplanes—flown by U. S. CPT-trained pilots and serviced by CPT mechanics—are everywhere. Control tower language is not Portuguese, but American. . . . Tippett says that any U. S. citizen can move into the pioneering area with no more—and perhaps less—difficulty than it would take to move into any foreign enterprise, but central Brazil is not all milk and honey. Yellow fever, malaria, and dysentery are not infrequent and the land is completely undeveloped. There are also the Chavante Indians who, so far as anybody knows, have never had anything to do with the outside world and what's more don't want to start now. They have six-foot arrows and bows to match and low-flying planes have come back with


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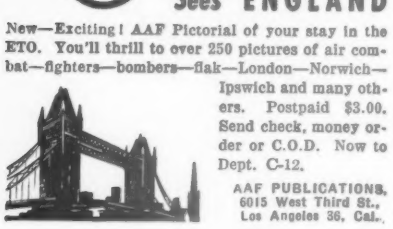


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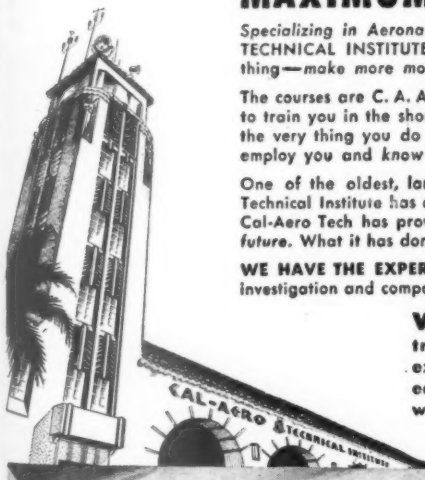


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holes in them. What's still more, the Brazilian government will not permit you to shoot back at Indians, policy being that if everybody is nice to them long enough, they'll quit shooting, too. . . .

## Pays to Fly

Hardly a day goes by that someone doesn't come up with a story (often documented) on how they have tried to save time by flying and have wound up ensnarled in the confusion that is currently a part of airline expansion. It gives us pleasure, therefore, to recount this little domestic idyll proving that going by air still has its advantages. Thomas B. Bourne, former director of CAA airways, is now consultant to the Mexican government in building theirs. Assisting him are Tom, Jr., and Charles I. Stanton, Jr., son of the CAA assistant administrator. All are pilots, so when they went to Mexico they naturally flew—without a single hitch. After a few weeks south of the border, Tom, Sr., wrote Mrs. Bourne, in Maryland, that he would have to stay for some months—maybe a year. So Mrs. Bourne loaded the rest of the family into an automobile and started south. Last we heard, she hadn't made it yet—chief difficulty is that the car breaks down every few miles.

## Chutes

Latest argument of parachute makers for their use in transports is that, especially on overseas flights, they are as necessary as life preservers. Chief advocate of the theory is Pioneer Parachuter Leslie L. Irvin, who began designing chutes in 1919 and is now president of the Irving Air Chute Co. Whether he gets anywhere with his latest campaign is problematical but one thing he came up with recently nobody denied and was hailed with cheers: the lives of more than 30,000 Allied flyers were saved by chutes during the six years of the war. Irvin says the figure comes from "official sources." We were unable to locate them after a brief check around Washington, but the figure would still be impressive at 15,000—or even 10,000 or even 10!

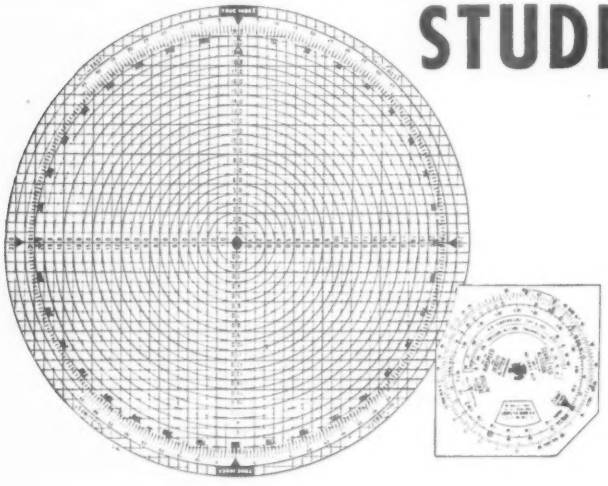
## Junior GI's

Also in full swing at nearly 100 U. S. colleges this fall are aviation Reserve Officers Training Corps programs. AAF announces that half as many more schools will be invited to install air ROTCs next fall, with an ultimate national goal of 50,000 enrollees. College men graduating from the programs are being counted on to staff future AAF reserve officer posts. . . . Special courses in the programs include aircraft maintenance, armament, weather, communications, administration, statistical control, supply, and transportation. Regular college credits will be given. General military training is the order of the day during freshman and sophomore years, just as in the old infantry ROTC. Junior year will be devoted to AAF history and in the senior year you can pick one of the eight special courses for study. On the more interesting side of the curriculum is a six-week camp session between junior and senior years, and seniors will get "some" flight training. But it probably won't be much, since the best AAF could offer was a statement that "each school will be furnished a surplus Army airplane, it is hoped."

## Whisper Commandos

If present AAF activities continue there may come a day when the traditional modern bleat of the infantry—"those guys up there never have to fight"—will be washed out. Crack troop carrier power pilots are now being trained to fly gliders and to fight commando style at the Third Air Force Glider Flight Training School, Greenville, S. C. When through with the glider course pilots return to their power assignments equipped to double in brass in the cockpit of a "whisper ship" and engage in hand-to-hand combat, whenever that becomes necessary, after landing behind enemy lines.

Night flying and low-level cross country operations feature the flight end of the glider program. Toughest hurdle for the powerplane boys to jump in the transition to gliders is to land them close to stalling speed instead of well above. Another problem: to learn not to over-control the glider on landings. Students shoot more than 63 landings before being graduated from the school and get a chance to fly all types of gliders. The gliders are generally towed by *Commando* or *Skytrain* troop carriers. Glider pick-up is also part of the training. Directing the training are Maj. Uriah F. Corkrum and Maj. Ernest LaSalle, both 3d Air Force Glider instructors. END

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# How to Dress An Airliner

(*Continued from page 66*)

plastic mirrors are used—and other new materials permit a whole new system of waste disposal for toilets.

The spun glass used in the upholstery, soundproofing, and even in the comforters on the berths and beds, has many advantages. One is that it doesn't absorb water and thus its presence will not increase the plane's load. In addition, it's proof-positive against fire, sound, vermin and dirt. And it is lighter in weight than any comparable material.

The serving of food will be a major problem for 204 passengers. Two new-style galleys are provided on the first deck with electric dumb waiters to speed the food to the upper deck. There is a pantry on the second deck.

An extensive communication system has been set up within the plane—and just off the forward entrance is a plastic telephone booth from which passengers can place calls from the plane to shore.

Another difficulty Dreyfuss had to solve was that of keeping the passengers amused. "We didn't want them to think they were strapped to their seats," he says. On both decks he has designed attractive lounges where the passengers can meet, talk and drink as they so desire. The chairs are covered with attractively-colored leather, shaved razor-thin to reduce weight. Tables with sunken ash trays are provided. Unique wall maps add to the appeal of the lounges. Motion picture shows are planned and other types of entertainment are being studied. Forward and beneath the pilots' compartment an unusual observation deck has been added for passengers.

Ever since he began designing airplane interiors, Dreyfuss has hoped that the airlines and the luggage manufacturers would get together and standardize on sizes of luggage. All bags need not look alike, he feels. "They can be anything from alligator to fibre but they can be of prescribed weight and size."

Although some airline officials have told Dreyfuss they believe that passengers would resent being dictated to as to size and weight of personal luggage, he believes that this is not true. "From the manufacturers' angle, a tag explaining that size and weight requirements have been complied with, attached to luggage in the stores, would give the bag salesman a chance for some glamor talk."

In this plane, he has designed small, easy-to-carry, featherweight aluminum bags which fit nicely under each seat. These could be provided for the passengers "who are in a hurry to go places—and who do not want to wait for luggage." Persons with additional luggage have ample stowage space aboard.

With all these developments, Henry Dreyfuss has, in co-operation with Consolidated Vultee engineers, made the Convair 37 (which is to be flown first as an Army transport) a sky hotel. It's beautiful and practical enough to make even the angels envious. END

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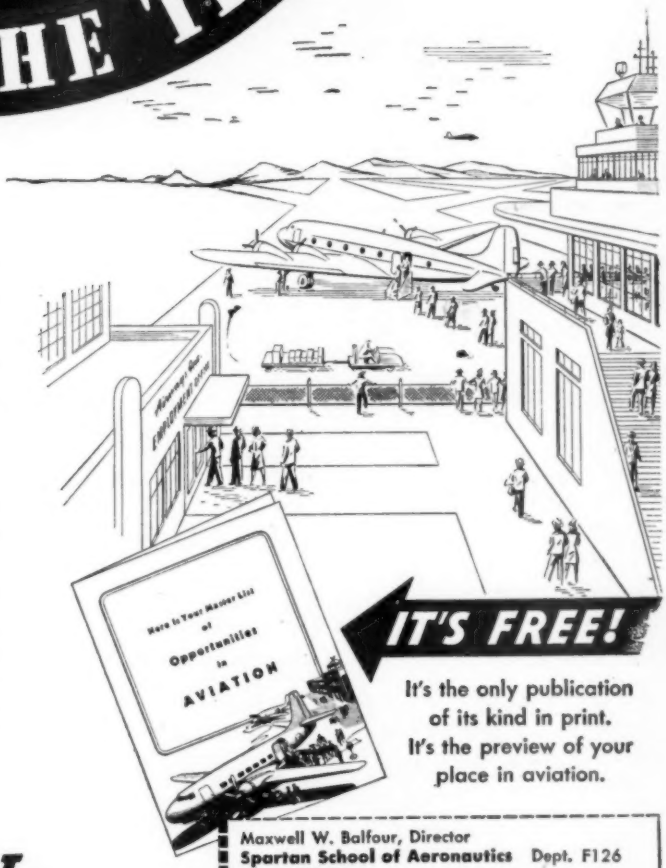


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## Letters

*(Continued from page 6)*

should see fit to take up air navigation. I do feel great admiration for any chap who is sufficiently birdlike to find his way around, even under CAVU conditions, without a good compass well compensated, a predetermined course well laid down, and the corrections for wind drift, variation, and deviation carefully determined and applied. However, I still advise navigation. I believe it is more than slightly responsible for my many years of successful, delightful and accidentless private flying over all parts of the United States and some of Canada's wilds.

BENJAMIN KING

Washington, D. C.

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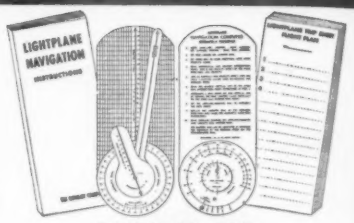


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